

FLIGHT

The
**AIRCRAFT
ENGINEER
&
AIRSHIPS**

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"FLIGHT" PHOTOGRAPHS.

To those desirous of obtaining copies of "Flight" Photographs, these can be supplied, enlarged or otherwise, upon application to Photo. Department, 36, Great Queen Street, W.C.2

DIARY OF CURRENT AND FORTHCOMING EVENTS

Club Secretaries and others desirous of announcing the dates of important fixtures are invited to send particulars for inclusion in this list —

1928

- Mar. 15 "Flying - Boat Maintenance." Flt.-Lieut. B. C. H. Cross, before R.Ae.S. & Inst. Ae.E.
- Mar. 15 Aero Golfing Soc.—Winter Meeting, Sir Samuel Instone Challenge Cup
- Mar. 24 Rugby, R.A.F. v. Army, at Twickenham
- Mar. 28-
- Apl. 4 Exhibition of Light Aeroplanes, Folkestone Drill Hall.
- Apl. 7 Cinque Ports Flying Club Demonstration, Lympne
- Apl. 8-9 Aerial Display, Suffolk Aeroplane Club, Hadleigh.
- Apl. 12 "Some Aspects of the Development of the Slot." Mr. G. R. Volkert, before R.Ae.S. & Inst.Ae.E.

INDEX FOR VOL. XIX.

The Index for Vol. xix of "Flight" (January to December, 1927) is now ready, and can be obtained from the Publishers, 36, Great Queen Street, Kingsway, W.C.2. Price 1s. per copy (1s. 1d. post free).

EDITORIAL COMMENT



The Air Estimates

NET increase of £700,000 as compared with last year's Air Estimates, associated, it is pointed out, with a decrease of £2,007,000 in the contribution from the Colonial and Middle Eastern Services Vote towards the cost of Air Services in Iraq, Palestine and Trans-Jordan, is the story which the Air Estimates for 1928-29 have to tell. Presumably, therefore, an actual "saving" of the difference between the increase of £700,000 and the two-million odd drop in the Colonial and Middle Eastern vote has been made on other heads, and a closer perusal of the Air Estimates reveals several undesirable directions in which such "savings" may be assumed to have been effected.

In his Memorandum Sir Samuel Hoare elucidates most of the more obscure items in the Estimates, but attention might be called to certain additional points. For instance, the Memorandum states that developments during 1928 will result in bringing the total strength of the R.A.F. up to the equivalent of 73 squadrons in all. On the face of it that looks satisfactory. But a closer examination reveals the fact that this "paper figure" includes the Fleet Air Arm, Army Co-operation and the squadrons stationed overseas. Thus, two new flights (the equivalent of a squadron) are to be formed for embarkation in aircraft carriers and battleships, bringing the strength of Fleet air units up to 25 flights (12½ squadrons.) Two new squadrons are being provided for India, and two flying-boat flights, of which one is to be located in home waters. Of Home Defence squadrons no word is said. Yet two or three years ago it was decided that 52 squadrons for Home Defence represented the minimum necessary to afford even reasonable

protection to these islands. The position now is that we have at home in all thirty-one squadrons, of which eight are non-regular squadrons. That, we submit is much too far below what was once thought essential, and no case has been advanced for changes in the international situation which would justify this country halting her air programme. The time was when we were told that no "cuts" were being made, but merely a retardation in the development that had been established. The "retardation" now appears to have become a stand-still, at least as far as Home Defence is concerned. Sir Samuel Hoare does not as a rule shirk any responsibilities that fall upon him, and his omission to refer to the complete stoppage in the development of aerial Home Defence is possibly due to nothing more than an oversight. Obviously he could not, in his Memorandum, refer to every detail of the Estimates, but we do submit that when the time comes for discussing the Estimates in the House, a full explanation of this particular point is due.

As in previous years, by far the largest single vote is Vote 3, "Technical and Warlike Stores (including Experimental and Research Services)" which, of course, covers the purchase of aircraft, engines and spares. Subhead A, which relates to these, shows a decrease on gross estimates of £216,000, i.e., from £5,904,000 in 1927 to £5,688,000 in 1928. In his Memorandum, and on the green pages of explanatory text with which the Air Estimates are inter-leaved, it is pointed out that the greater portion of this decrease is due to a smaller requirement of aircraft spares consequent on the introduction of new types of machines. If this is so, it would seem to be an excellent argument in favour of speeding-up the replacement programme, and in this connection it is interesting to find in the Memorandum the statement that "nine squadrons are to be re-equipped with machines of the latest design, in addition to the equipment of the various new units to be formed in 1928." The "various new units" presumably are the two new squadrons for India, the equivalent of one squadron for the Fleet Air Arm, and the equivalent of one squadron in the form of two new flights of flying-boats. On this assumption, 13 squadrons, or their equivalent, are to be re-equipped with up-to-date aircraft and engines. Taking a squadron as 12 machines, this will therefore mean 156 new machines to be ordered during the year, presumably of "production types," and excluding experimental types. That might appear a reasonably large number, but when it is remembered that there are some 20 aircraft firms in the country, it only amounts to a little more than 7 machines per firm, assuming an even distribution of orders. Obviously, there will not be an even distribution. Moreover, two flights of flying-boats are included in the number, or probably 12

machines. The number of flying-boat firms is limited. Then there is another 12 or so for the Fleet Air Arm; again, types not being produced by all our firms. Consequently, one is forced to the conclusion that not a few of our aircraft firms are likely to be having a lean time of it during 1928. When it is realised that the safety of the country must of necessity depend upon an aircraft industry, financially able to keep together its designing staffs, and able to expand rapidly should the need occur, the outlook is none too good.

Under the heading "Research and Technical Development," the Memorandum states that "the experimental aircraft programme provides for the inception of work on 14 new types, including both a high-speed and a civil specification." The "high speed" specification may be assumed to refer to machines for the next Schneider Trophy race, and the inclusion of one civil specification (little enough in all conscience) reduces the number of experimental service types to 12. It is possible that some of the new types may go into production, and thus come under the 156 machines previously referred to. But even if they do not, a total of 168 service machines, one racing type, and one civil aircraft is not sufficient to keep the aircraft industry in a healthy condition, the more so as the spasmodic system of placing orders results in added difficulties.

Under the same heading, Sir Samuel Hoare makes the welcome announcement that a seaplane testing tank is to be begun this year. This has been long overdue, as has also the variable density wind tunnel to which the Secretary of State for Air refers.

There is a net reduction in the Civil Aviation Vote of £49,000, although subsidies have increased from £247,000 to £266,000, of which £250,000 is to go to the air transport services, and £16,000 to the light 'plane clubs. The Memorandum states that the increase has been found by allocating to subsidies a substantial part of the savings effected on works services.

Exactly how the sum of £16,000 is to meet a possible demand of £2,000 from each of 13 recognised light 'plane clubs is not quite clear, and one can only assume that the presumption is that but very few clubs will be able to earn the full subsidy.

Taking it all round, the 1928-29 Air Estimates cannot be said to be entirely satisfactory, more especially from the point of view of the aircraft industry, the long-promised and long overdue encouragement to which appears still as far off as ever. At present there are some 20 aircraft firms in existence. We shall be surprised if the number has not been materially reduced by the end of the financial year. And the tragedy is that not one of those firms can be spared if the country is to enjoy even a moderately safe position in the air.



The Royal Visitor

It is stated unofficially that the King of Afghanistan will visit Halton on March 17 in the morning to inspect the School of Technical Training, and Hendon aerodrome in the afternoon. On March 21 he will be at Croydon aerodrome, and visit the Rolls-Royce works at Derby on March 27.

New Air Line from London

THE French Air Union's new service between Croydon and Cannes began on March 1. According to schedule, the departure from Croydon is at 7 a.m., and the arrival at Cannes at 5 p.m. To land at Cannes before darkness sets in punctuality must be observed up to Marseilles, because there are no

arrangements for night landing at Cannes. On the first day one of the machines on the Paris-Marseilles section made a forced landing, and was wrecked near Lyons. Farman Goliaths are used between London and Paris; Bleriot Spads (260 h.p. Salmson engines) between Paris and Marseilles, and also Bleriot Spads (450 h.p. Gnome-Rhone-Jupiter engines). Flying boats of the Lioré et Olivier type, with two 150 h.p. Hispano-Suiza engines, complete the journey. The service in the reverse direction, Cannes-London, has been run to schedule regularly, but it was a few days before the outward journey was flown, owing to bad weather and other mishaps.



[" FLIGHT " Photographs]

THE UBIQUITOUS "HORSLEY": These photographs show a Hawker "Horsley" fitted with one of the new Armstrong-Siddeley "Leopard" radial engines which resemble the famous "Jaguar" in many respects but are of much higher power. The "Horsley-Leopard" combination has provided valuable information and there would seem to be no end to the purposes for which the "Horsley" can be successfully used.

THE BREDA A.7 MONOPLANE

A Successful Italian Military Machine

ALTHOUGH now one of the largest aircraft constructing firms in Italy, the Societa Italiana Ernesto Breda, of Milan, is not, perhaps, so well known in this capacity to our British readers as some of the other Italian and Continental aircraft concerns. We are glad, therefore, to be able this week to give a brief description of one of the latest Breda products, which has, we understand, given very satisfactory results in Italy.

It might be as well before proceeding with our description to say a few words regarding the Breda firm itself. An old-established Italian engineering company in pre-war days, S. I. E. Breda, during the Great War produced large quantities of aircraft parts and accessories. It also built Caproni machines and Isotta Fraschini aero engines.

work, for which it was designed. Except for the fabric covering of the planes and fuselage, the A.7 is entirely of metal (steel and duralumin) construction.

The wings possess several interesting features; they have a very efficient section of medium thickness, and vary as regards the latter from maximum at a point about midway out from the root to a minimum at the tips and root. They are supported above the fuselage on a cabane consisting of two inverted V struts, while a pair of bracing struts on either side extend from the lower longerons of the fuselage up to the wings, where they are attached at the point of maximum thickness. These struts consist of steel tubes, with streamline fairings.



THE BREDA A.7 MONOPLANE : Three-quarter front view of the recent Italian reconnaissance machine fitted with a 500 h.p. Asso engine.

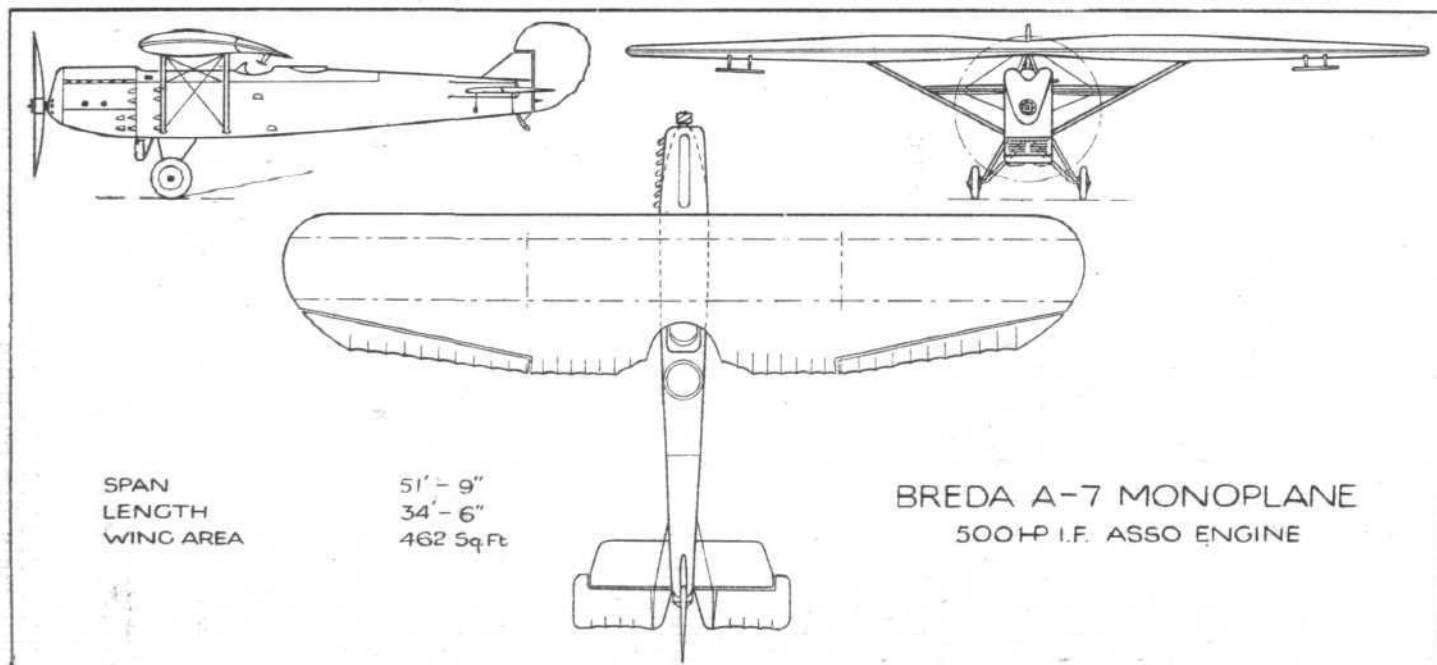
After the war the Breda firm produced a number of experimental machines of its own design, some of which were of more than usual interest, and were very successful. Subsequently it took up the problem of metal construction, and designed some all-metal machines which gave very satisfactory results.

Besides the construction of aircraft, the Breda firm also runs a highly efficient school of flying, about which we hope to have something further to say on a future occasion.

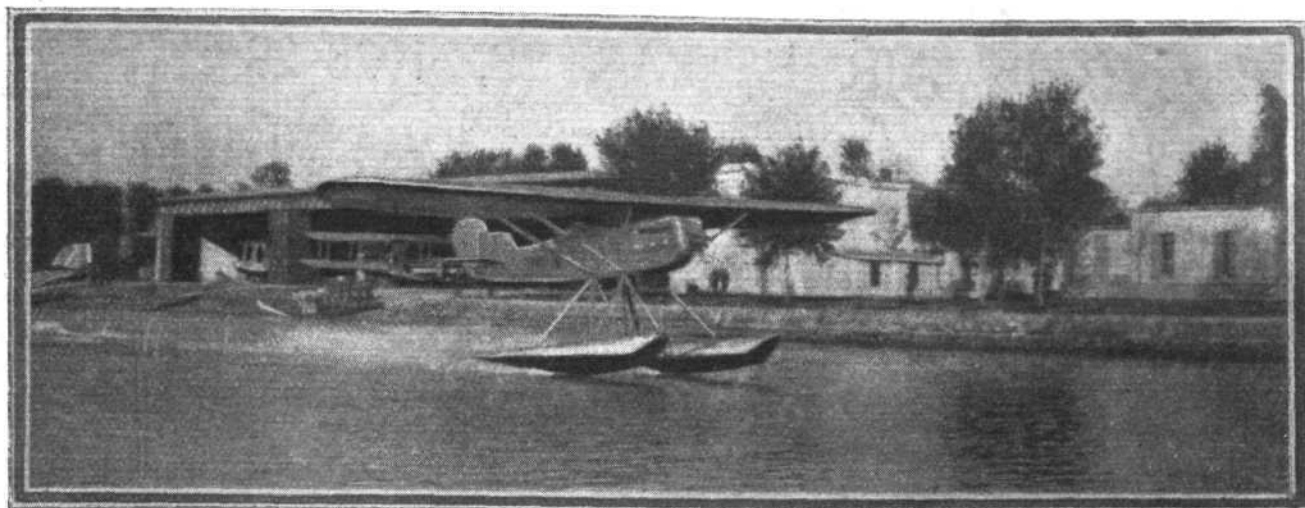
The Breda A.7—the machine we are about to describe—is a 2-seater high-wing (or "Parasol") "semi-cantilever" monoplane, a type particularly suitable for reconnaissance

Constructionally the A.7 wings are exceptionally strong and rigid, thorough tests having been carried out with the first experimental machine, resulting in many modifications and improvements. For instance, instead of wooden spars, these are now constructed of steel, in lattice form, the flanges and webs being of sheet-steel cold-pressed to the required sections. The transverse members are also of pressed steel, and are riveted to the main spars.

The ribs are of duralumin, and abut against the front spar; the leading edge forms a separate unit, complete with framework and metal covering, attached to the front spar—thus forming a large single casing. It is claimed for this form of



THE BREDA A.7 MONOPLANE : General Arrangement Drawings.



THE BREDA A.7 MONOPLANE : The machine can be converted into a seaplane by replacing the wheel undercarriage with twin float gear.

construction that a very strong and rigid structure is obtained, especially in the matter of torsional stresses. The A.7 wing is capable of withstanding any form of stunting.

A portion of the trailing edge of the plane is cut away at the centre, above the pilot's cockpit, in order to provide an unobstructed view upwards. The ailerons are of fairly large proportions, extending for nearly half the length of each wing, and thus render the machine very manoeuvrable. Lateral control is further facilitated by the provision of small auxiliary balancing surfaces mounted on the ailerons. The rudder and elevators are also balanced.

The fuselage of the A.7, which is of rectangular cross-section, is constructed entirely of steel, also from pressed sheet, riveted together, being built up of longitudinal and numerous transverse members. The pilot's cockpit, which is very comfortable, is situated below the trailing edge of the 'plane, and immediately behind is the observer's cockpit. Both are provided with controls—the joystick in the observer's cockpit being removable—while the pilot's dashboard, containing a full range of instruments, is placed so as to give easy reading of the latter.

In the pilot's cockpit, also, is a self-starter for the engine, while a small wheel close at hand enables the incidence of the tail plane to be adjusted during flight.

The 500 h.p. Isotta Fraschini engine and its steel mounting forms a separate and detachable unit, being secured by four bolts and thus providing for quick and easy changing of the power plant. The whole engine is completely enclosed in a neat metal housing, the radiator being slung beneath the

fuselage. Sufficient fuel is carried for a flight of seven hours.

The landing gear is another distinctive feature of the Breda A.7, being of the non-axle type constructed of riveted sheet steel. Each wheel is carried by two enclosed V's, the shock absorbers, which are particularly soft in action, being contained within the outer V's.

The A.7 is easily converted from a land machine into a seaplane by fitting two floats in place of the wheels. The first machine of this type was recently tested at the Breda factory at Mestre (Venice), and gave good results both as a land-plane and seaplane.

The principal characteristics of the Breda A.7 are:—

Span	51 ft. 9 in.
Overall length	34 ft. 6 in.
Wing area	462 sq. ft.
Weight empty	3,440 lbs.
Useful load	1,984.5 lbs.
Total weight	5,424.5 lbs.
Weight per square foot	11.68 lbs.
Weight per horse-power	10.87 lbs.
Safety factor	10.5
Speed range	46.5–152.25 m.p.h.
Climb to 16,400 ft.	23 mins.
Service ceiling	24,607 ft.

"Everling Quantities" (Metric)

High-speed figure	23
Distance figure (top speed)	4.5
Altitude figure (ceiling)	8.5

Levee at St. James's Palace, March 6

H.M. THE KING held a Levée at St. James's Palace on Tuesday, March 6, when amongst those present were Air Marshal Sir John Salmond, Principal Air Aide-de-Camp, and Sir Samuel Hoare, Secretary of State for Air. The following were amongst those presented to the King:—Flight-Lieut. A. Bayley, Group-Capt. the Hon. J. Boyle, C.B.E., D.S.O., Flight-Lieut. E. Brewerton, D.F.C., Flight-Lieut. J. Bussey, Flight-Lieut. C. Cahill, Flying-Officer L. Cannon, Flight-Lieut. C. Collingwood, Group-Capt. I. Courtney, C.B.E., Flying-Officer A. David, Flying-Officer E. Dearth, Flight-Lieut. O. de Putron, Flight-Lieut. G. du Boulay, Flight-Lieut. C. Hill, Flight-Lieut. R. Horniman, Flight-Lieut. E. Ffoulkes-Jones, Flight-Lieut. A. Laing, Wing-Com. J. MacDonald, Flight-Lieut. H. McKenna, D.C.M., Flying-Officer R. Money, Flight-Lieut. S. Pope, D.F.C., Flying-Officer V. Ross, Flight-Lieut. E. Routh, Flying-Officer J. Sender, Flight-Lieut. E. Steddy, Flying-Officer R. Stone, Flying-Officer R. Taaffe, Sqdr.-Ldr. F. Workman, M.C., etc.

Sir John Salmond to Visit Australia

A REQUEST, announces the Air Ministry, has recently been received from His Majesty's Government in the Commonwealth of Australia for the loan of the services of a senior officer of the Royal Air Force to advise them on the air defence of the Commonwealth and on the organisation, training and equipment of the Royal Australian Air Force. Arrangements have accordingly been made for Air Marshal Sir John Salmond, K.C.B., C.M.G., C.V.O., D.S.O., A.D.C. Air Officer Commanding-in-Chief, Air Defence of Great

Britain), to visit Australia this summer. Sir John Salmond is expected to arrive in Australia about the middle of June and will stay there about three months.

War Inventions Awards

THE fifth report of the Royal Commission on Awards to Inventors, covering the period from January 1, 1926, to December 31, 1927, issued on February 5, includes the following claims dealing, directly or indirectly, with aircraft:—Lieut.-Col. J. T. C. Moore-Brabazon (Aircraft Cameras), £600; Mr. F. Marten Hale (Aerial Bombs), £1,000; Mr. Norman A. Thompson (Improvements to Flying-Boats), £3,000; Peter Brotherhood, Ltd. (Improvements to Internal Combustion Engines), £25,000, with liberty to apply as to further award; Mons. A. I. Caquot (Caquot Balloon), £3,000. Among the unsuccessful claims were:—Air Commodore C. R. Samson (Aircraft Launching Gear); Lieut. A. G. Fulford (Aircraft Launching Gear); Rear Admiral M. F. Sueter, Lieut.-Col. L'Estrange Malone and the executor of Col. D. Hyde-Thomson (Torpedo-Carrying Seaplanes).

Air Mails

THE Postmaster General announces that a Correction Notice No. 1 to the Air Mail Leaflet (October, 1927, edition) has been issued, and may be obtained on application at any Head or Branch Post Office, giving particulars of the conditions under which correspondence may be posted for onward transmission by Air Mail Service into the interior of the Belgian Congo, of the resumption of early morning letter Air Mails to Paris, Berlin and Hanover, and of an extension of the Air Mail service in Colombia.

THE AIR ESTIMATES, 1928-29

A Net Increase of £700,000

THE Air Estimates for the financial year 1928-29 were issued on March 8, and show a net increase, as compared with last year's Estimates, of £700,000. The gross estimate is £19,135,100, but appropriations-in-aid are expected to reach £2,885,100, thus reducing the total for effective and non-effective services to £16,250,000. Personnel shows a decrease of 500, from 33,000 to 32,500.

The following table shows the amounts required under the various votes, and in order to facilitate comparison with previous years' Estimates we have included the figures for the last five years. The amounts shown are net estimates.

NET ESTIMATES.					
Votes	1928-29	1927-28	1926-27	1925-26	1924-25
1 Pay, etc., of R.A.F.	3,401,000	3,160,000	3,405,000	3,412,000	2,941,000
2 Quarters, stores (except technical), supplies and transport	1,711,000	1,365,000	1,507,000	1,459,000	1,452,000
3 Technical and warlike stores (including experimental and research services)	6,567,000	6,424,000	6,091,000	5,650,000	6,050,000
4 Works, buildings and lands	1,700,000	1,900,000	2,347,000	2,572,000	2,127,000
5 Medical services	310,000	203,000	209,000	204,000	195,000
6 Educational services	504,000	507,000	432,000	486,000	480,000
7 Auxiliary and Reserve Forces	554,000	500,000	406,000	348,000	284,000
8 Civil Aviation	415,000	464,000	462,000	357,010	355,000
9 Meteorological and miscellaneous effective services	223,000	150,000	135,000	131,000	134,000
10 Air Ministry	657,000	687,000	761,000	751,000	710,000
Total effective services	16,042,000	15,360,000	15,755,000	15,370,010	14,728,000
11 Non-effective services (half-pay, pensions and other non-effective services)	208,000	190,000	245,000	143,000	133,000
Total effective and non-effective services	16,250,000	15,550,000	16,000,000	15,513,010	14,861,000

Personnel

The grouping and numbers of personnel this year are as follows:—

Air Officers: Vote 1, 20; Vote 6, 3; Vote 7, 1; Vote 10, 11; total, 35. *Other Commissioned Officers*: Vote 1, 2,804; Vote 3, 34; Vote 5, 208; Vote 6, 159; Vote 7, 67; Vote 10, 128; total, 3,400. *Cadets*: Vote 6, 125; total, 125 (an increase of 5). *Warrant Officers*: Vote 1, 248; Vote 3, —; Vote 5, 11; Vote 6, 49; Vote 7, 11; Vote 10, 1; total, 320. *Non-Commissioned Officers*: Vote 1, 4,207; Vote 3, 3; Vote 5, 217; Vote 6, 456; Vote 7, 114; Vote 10, 3; total, 5,000 (an increase of 300). *Aircraftmen*: Vote 1, 18,243; Vote 5, 557; Vote 6, 893; Vote 7, 306; Vote 10, 1; total, 20,000 (a decrease of 525). *Apprentices*: Vote 1, 200; Vote 6, 3,300; total, 3,500. *Enlisted Indian Personnel in Iraq*: 120. Number to be voted, 32,500 (a decrease of 500). It is pointed out that this includes Army personnel attached to the R.A.F.

Financial Expenditure

The summarised statement of the amounts estimated to be required for pay, &c., of the R.A.F. is as follows:—Pay and personal allowances of officers, £1,236,000; pay and personal allowances of airmen, £2,083,000; marriage allowances, £116,000; miscellaneous allowances and payments, £33,000; civilians, £781,000; service gratuities to airmen on discharge, etc., £15,500; recruiting staff and expenses, £8,500; gross total, £4,273,000; appropriations-in-aid, £872,000; net total, £3,401,000; net increase, £241,000.

Under Vote 2 the summarised figures are:—Lodging allowances and billeting, £115,000; barrack services, £63,000; fuel and light, £211,000; general stores, £189,000; clothing, £291,000; provisions and horses, £640,000; transport, £363,000; gross total, £1,872,000. Appropriations-in-aid, £161,000. Net total, £1,711,000, a net increase of £346,000.

Vote 3, *Technical and Warlike Stores*, provides for the following amounts:—Aeroplanes, seaplanes, engines and spares, £5,688,000; experimental and research establishments, £124,000; inspection services, £161,000; aircraft technical and warlike stores, £142,000; armament and ammunition, £323,000; electrical stores, £229,000; miscellaneous research and development, £280,000; miscellaneous materials, £200,000; balloons and hangars, £32,000; mechanical and other transport, £281,000; petrol and oil, £520,000; rewards to inventors and miscellaneous claims (including war liabilities), £50,000; purchase of airships, £70,000; airship development, £380,000; gross total, £8,480,000. Appropriations-in-aid, £1,563,000. Deduct for probable underspending

on the Vote as a whole, £350,000. Net total, £6,567,000, a net increase of £143,000.

The summarised statement under Vote 4, *Works, Buildings and Lands*, is as follows:—Staff for works services, £214,000; new works, additions and alterations, amounting to £2,500 each and upwards, £1,040,000; ditto under £2,500 each, £112,000; ordinary repairs, renewals and maintenance, £470,000; grants in aid of works, £14,000; purchases of lands and buildings, £140,000; rents, compensations, and reinstatements, £35,000; incidental expenses of Air Ministry estates, £11,000; provision of telephone and telegraph

services, £1,000; miscellaneous works services, £10,000; stores and plant for works, £15,000; machine tools, £8,000; gross total, £2,070,000. Deduct for probable underspending on the Vote as a whole, £150,000. Appropriations-in-aid, £220,000. Net total, £1,700,000, a net decrease of £200,000.

The Medical Services, Vote 5, are estimated to require £310,000, as follows:—Pay and personal allowances of officers, £133,000; pay and personal allowances of airmen, £98,000; nursing service, £23,000; fees, etc., to civil medical practitioners, £3,000; civilians employed in hospitals and sick quarters, £16,000; medical stores and supplies, £11,000; payments to hospitals, £31,000; miscellaneous charges, £3,000; gross total, £318,000. Appropriations-in-aid, £8,000. Net total, £310,000, a net increase of £107,000.

Educational Services, Vote 6, are estimated to require the following amounts: Imperial Defence College, £2,750; R.A.F. Staff College, Andover, £14,000; R.A.F. Station and Cadet College, Cranwell, £72,000; School of Technical Training, Halton, £256,000; Electrical and Wireless School, Flowerdown, £71,250; School of Technical Training, Manston, £42,500; School of Physical Training, Uxbridge, £3,000; School of Store Accounting and Storekeeping, Kidbrooke, £3,000; general and vocational training, £45,500; miscellaneous educational services, £5,000; gross total, £515,000. Appropriations-in-aid, £11,000. Net total, £504,000, a net decrease of £3,000.

Vote 7, *Auxiliary and Reserve Forces*, is estimated to require £554,000, as follows:—R.A.F. Reserve: pay and personal allowances of permanent staff, £4,500; pay and personal allowances during training, £13,000; retaining fees and reserve pay, £225,000; capitation payments to civil companies for training courses, £199,000; miscellaneous expenses, £1,300. *Special Reserve and Auxiliary Air Force*: pay and personal allowances of headquarters staff, £8,000. *Special Reserve*: pay and personal allowances of regular personnel, £49,000; training, £5,000; miscellaneous expenses, £1,000. *Auxiliary Air Force*: pay and personal allowances of regular staff, £28,000; grants to county associations, £4,200; training, £8,300; miscellaneous expenses, £2,900. *University Air Squadrons*: pay and personal allowances of instructors, £3,600; miscellaneous expenses, £1,000. *Voluntary Aid Detachments*: miscellaneous expenses, £300. Gross total, £554,100. Appropriations-in-aid, £100. Net total, £554,000, a net increase of £54,000.

Civil Aviation, Vote 8, is estimated to require the following amounts: civil aviation aerodromes, £29,000; air routes, surveys, etc., £29,000; technical equipment, £8,000; works,

buildings and lands, £93,000; miscellaneous, £2,000; civil aviation subsidies, £266,000. Gross total, £427,000. Appropriations-in-aid, £12,000. Net total, £415,000, a net decrease of £49,000. This Vote does not include the cost of the headquarters staff of the Director of Civil Aviation, which is paid from Vote 10, nor the cost of the Meteorological services at civil aerodromes (estimated at £6,900), which are provided for under Vote 9.

It is estimated that Vote 9, *Meteorological and Miscellaneous Effective Services*, will require the following amounts:—*Meteorological Services*: salaries and allowances of the Meteorological Office, £49,900; salaries, wages and allowances of staff at Meteorological Office, £59,600; fuel, light and transport, £3,500; instruments, equipment, stores and research, £9,500; works services, £5,200; telegraphic, telephonic, and miscellaneous charges, £13,400; superannuation, £1,900. Total, £143,000. Appropriations-in-aid, £12,500. Net total, £130,500. *Miscellaneous Effective Services*: compensation for losses, £12,000; losses in exchange, £300; payments to the War Office in respect of prison services, £3,000; telegraphic and telephonic charges and postage abroad, £56,700; miscellaneous, £22,000; allowance to ministers of religion, £6,000. Total, £100,000. Appropriations-in-aid, £7,500. Net total, £7,500. Gross total, Vote 9, £243,000. Appropriations-in-aid, £20,000. Net total, £223,000, a net increase of £73,000.

£657,000 is estimated to be required in order to pay for the *Air Ministry*, Vote 10, as follows: Salaries of the Air Council, and Department of the Secretary, £310,200; salaries of the Department of the Chief of the Air Staff, £130,100; salaries of the Department of the Air Member for Personnel, £44,100; salaries of the Department of the Air Member for Supply and Research, £130,900; salaries of the Directorate of Civil Aviation and the Accidents Branch, £17,100; pay of messengers, porters, etc., £25,700; contingent expenses, £900. Gross total, £659,000. Appropriations-in-aid, £2,000. Net total, £657,000, a net decrease of £30,000.

The last Vote, No. 11, is for *non-effective services*, which are estimated to require £208,000, as follows: rewards to officers, warrant officers, non-commissioned officers and aircraftmen, £350; half-pay of officers, £2,500; service and disability retired pay and gratuities of officers and nurses, £135,000; pensions to wounded officers, £550; service and disability pensions and gratuities—warrant officers, non-commissioned officers and aircraftmen, £41,000; pensions, gratuities and allowances to widows, children, etc., £18,500; civil non-effective payments, recurrent charges, £6,600; civil non-effective payments, gratuities and other non-recurrent charges, £2,400; injury grants, £4,950; commutation of retired pay, wounds pensions, etc., £11,600; relief fund, £500; compassionate grants, £50. Gross total, £224,000. Appropriations-in-aid, £16,000. Net total, £208,000, a net increase of £18,000.

As in previous years, the Air Estimates are accompanied by a Memorandum by the Secretary of State for Air, Sir Samuel Hoare. This Memorandum is given in full below.

Memorandum by the Secretary of State for Air to Accompany Air Estimates for 1928

The net total of Air Estimates which Parliament is asked to vote is £16,250,000, the gross total being £19,135,100. The corresponding figures for 1927 were £15,550,000 net and £19,986,400 gross.

The gross amount, therefore, shows a decrease of £851,300, but at the same time contains provision for an additional expenditure of some £200,000 due to the further expansion of the Fleet Air Arm. The decrease on services more directly within Air Ministry control is consequently about £1,050,000. It is to be noted that this decrease has been effected in a year in which the Royal Air Force will (over and above the expansion of the Fleet Air Arm) be enlarged by two new flights of flying-boats and by the formation of two new squadrons for India, besides assuming additional responsibilities at Aden. These increases of strength are referred to in more detail below.

The apparent increase of £700,000 in the net estimates is due to the discontinuance of the existing form of the Middle East Vote on the Civil Estimates which has hitherto met all expenditure in Iraq, Palestine, Transjordan and Aden falling on gross Air Votes by a balancing appropriation-in-aid; and the substitution of a subhead on the Colonial and Middle Eastern Services Vote out of which will be met only the extra cost of maintaining in Iraq, Palestine and Transjordan, instead of in this country, such air forces as are still retained there. This principle of "extra cost" is not applicable to an Imperial base like Aden, but the cost of the air command at that place will be partly met by the appropriation-in-aid of Air Votes of a proportion of the existing Indian

contribution of £250,000, which will be shared with the Army.

There is, again, a "super-cut" applied (in a proportion slightly different from that of last year) to Votes 3 and 4. Details are shown in the following table:—

	1928.	1927.	+ or —
	£	£	£
True gross (total of expenditure subheads)	19,635,100	20,486,400	— 851,300
Deduct "super-cut"	500,000	500,000	—
Gross estimate ..	19,135,100	19,986,400	— 851,300
Deduct Appropriations-in-aid ..	2,885,100	4,436,400	— 1,551,300
Net estimate ..	16,250,000	15,550,000	+ 700,000
<i>Details of Appropriations-in-aid:—</i>			
From Civil Votes (Middle East) ..	250,000	2,257,000	— 2,007,000
Aden ..	150,000	110,000	+ 40,000
Supplies to troops (Middle East and Aden) ..	180,000	283,000	— 103,000
Fleet Air Arm ..	1,080,000	882,000	+ 198,000
Ordinary Appropriations-in-aid	1,225,100	904,400	+ 320,700
Total Appropriations-in-aid ..	2,885,100	4,436,400	— 1,551,300

Of the gross decrease of £851,000, about £500,000 is found under Vote 4 (Works and Buildings). The slowing down of the expansion of the Royal Air Force and in the provision of permanent accommodation has its maximum effect on this vote in the coming year. The variations on the other votes are explained below; generally speaking, they are the outcome of normal developments which would have led to a total increase but for their being outweighed by continued efforts in the direction of economy, particularly in Iraq, where, owing to continued success in the use of air power, it has been possible to effect reductions amounting to about £600,000 on Air Votes alone.

Strength and Distribution of the Royal Air Force

As foreshadowed in the memorandum issued with the Air Estimates for 1927, the formation of three squadrons for Home Defence, two regular and one non-regular, has been put in hand in the past year, in addition to five new flights (the equivalent of 2½ squadrons) for the Fleet Air Arm and one squadron for Army co-operation. The present strength of the Royal Air Force is thus approximately equivalent to 69 squadrons, including eight on a non-regular basis.

Developments in 1928 will be principally overseas, and will result in a total addition of the equivalent of four new squadrons, so that the Royal Air Force will, at the end of the year, comprise 73 squadrons in all. Two squadrons, additional to the six at present maintained there, are being provided for India, the cost of which will fall on the Indian Exchequer. Two new flights will be formed for embarkation in aircraft carriers and battleships, which will bring the strength of the air units allotted for Fleet work to a total of 25 flights (12½ squadrons). Provision is also made for two new flights of flying-boats, a type of aircraft which has great potentialities for protecting Imperial communications. One of these flights will be located in home waters, while the other will proceed overseas.

During the past year No. 47 Squadron has been moved from Egypt to Khartoum, and Nos. 45 and 8 from Iraq to Egypt and Aden respectively. In accordance with a recent decision of H.M. Government, the primary responsibility for the defence of Aden is being transferred from the War Office to the Air Ministry, and the increase in air strength there is being followed by a reduction in the numbers of the present military garrison. It is anticipated that a substantial net economy to the Exchequer will result.

Long Distance Flights.

Long distance flights between Egypt and Nigeria and between Cairo and the Cape (the latter in conjunction with aircraft of the South African Air Force) were again carried out in 1927, and the latter will be repeated in 1928. Apart from the primary purpose of these flights as training exercises

and as tests of the reliability of the aircraft employed, it is increasingly evident that such visits serve a valuable Imperial purpose in remote centres which are with difficulty accessible by other means of communication.

A cruise was also carried out by four large flying-boats in northern waters in August and September.

The following month four Southampton flying-boats began an extended cruise to the Far East. The primary object of this cruise is to obtain further experience of the problems involved in operating and maintaining large flying-boats at a distance from any fixed base. The itinerary of the first stages of the flight has been from England to India and on to Singapore, which was reached on February 28; from thence the flight will be continued to Australia. On the return journey the boats will visit Hong Kong via Borneo and the Philippines. The total projected mileage of the cruise is 28,000, 11,000 miles of which have already been covered without mishap or deviation from the programme.

Personnel

A slight reduction is made in Vote A (maximum numbers to be borne during the year), which now stands at 32,500.

Some further measures have been taken in replacement of service personnel by civilians for duties in which it is found that the latter can be advantageously employed with resultant economy; and there have been savings in ancillary services in Iraq. The average numbers, however (which govern the provision in Vote I and the other Personnel votes) are expected to rise. An increase in the numbers of officers of the General Duties Branch borne on Vote I contributes to this result, which is mainly accounted for by the formation of new units and the bringing up to establishment of squadrons and flights which have been partly formed during the present year.

Training

In my memorandum accompanying last year's estimates the instructional system in vogue and the various establishments which it is necessary to maintain for the flying and other specialised training of the Royal Air Force were described in some detail, and recapitulation on this occasion is unnecessary. The reconstruction of the station at Spittlegate for the purposes of a flying training school which has been proceeding for some time past is practically complete, and the existing flying training school at Netheravon will be transferred there. Netheravon will, however, continue for the present to be used for the training of pupils in excess of the capacity of the other flying training schools.

Provision for the School of Physical Training, Uxbridge, and the School of Store Accounting and Storekeeping, Kidbrooke, previously made in Vote I, is now made under the heading of Educational Services (Vote 6), but in spite of these additions, the gross total of the latter vote shows a small decrease.

Dominion Co-operation

Considerable progress has been made in regard to the arrangements for co-operation with the air forces of the Dominions, which were discussed at the Imperial Conference of 1926 and briefly referred to in my memorandum accompanying last year's estimates. The officers who joined the Royal Air Force on short service commissions after carrying out their initial training with the Royal Australian Air Force have been posted to vacancies in service squadrons and have proved themselves valuable and efficient. A further contingent has just joined, and others are to follow in subsequent years. A guiding principle kept in view in all these arrangements is to secure as far as possible identity in the objects and methods of training of the air forces of the Empire.

At the request of the Australian authorities four Royal Air Force officers—a wing-commander and three squadron-leaders—have been lent to Australia for service at headquarters. A regular scheme of interchanges is being developed between the Royal Air Force and the Australian and Canadian Air Forces.

Six officers of the Iraq forces are being trained at the Royal Air Force Cadet College on behalf of the Iraq Government.

Reserve and Auxiliary Forces

The reserve and auxiliary forces will continue to be steadily developed in 1928, involving an increase in Vote 7 of £54,000. A satisfactory growth in the strength of existing units has been recorded during the year.

In view of the increasing number of airmen pilots transferring to the Reserve, arrangements have been made for the flying practice of these reservists at the civil schools, where for some time past the corresponding flying of officers of the Reserve has been carried out.

The squadrons at the Universities of Oxford and Cambridge, whose constitution and objects have been previously described,

continue to make highly satisfactory progress and to provide a flow of candidates for commissions. The membership of each squadron has been increased to a maximum of 75. The authorities at both Universities now permit flying in term time, an arrangement which has proved a great success.

Technical Equipment

A comparison of Vote 3 (Technical Equipment) with the corresponding vote in 1927 is considerably affected by the loss of the Middle East repayment (£810,000). The gross figures show a decrease of £359,000. To the extent of £50,000 this is due to an increase in the overall allowance for under-spending; but the principal single cause of the variation is a reduction of some £200,000 in the provision under Sub-head A for aircraft spares, due to satisfactory experience of the maintenance costs of modern types. Apart from this the scale of monetary provision is not substantially altered.

The process of re-armament with new aircraft and aero engines, begun last year, will be continued. The programme for this year provides for nine squadrons to be re-equipped with machines of the latest design, in addition to the equipment of the various new units to be formed in 1928.

The control of aircraft at low speeds by means of slots in the wing structure is being actively developed. Details of the mechanism, which has to be separately adapted for each type of wing section, have been worked out for fifteen different types of service aircraft, and in the case of the Bristol Fighter the process of fitting the automatic slot to all machines, at the rate of six per week, is already well advanced.

The re-equipment of the Royal Air Force with new motor transport has become necessary, as the age of the existing vehicles, some of which have been in service for over ten years, renders their reconditioning definitely uneconomical. The advent of a cheap six-wheeled vehicle, which has proved highly satisfactory on test and which is inexpensive to maintain, makes it possible to replace the worn-out transport with a type which will provide greater mobility over rough country—a need which is largely felt in the Royal Air Force, especially in those units which normally co-operate with the Army. Provision is made in this estimate for a commencement of the process of replacement.

A parachute is now supplied for every aircraft in the service which is capable of carrying it, that is, over 75 per cent. of all machines. This percentage will rise to 86 per cent. in 1928. Seagoing aircraft, which comprise the great part of the remainder, have not yet been fitted, as the parachute with its present form of attachment involves risk of drowning the wearer; a new quick release gear has, however, been recently designed, which is expected to solve this difficulty.

Research and Technical Development

The provision for Scientific Research and Technical Development is shown in Appendix I; the net total for these services does not differ appreciably from that of last year. The experimental aircraft programme provides for the inception of work on fourteen new types, including both a high-speed and a civil specification. The programme of aero engine development covers a wider field this year owing to the advance made in basic problems, such as the gearing down of propeller speed and new methods of cooling, the results of which are now ready to be applied to individual types in detail, with prospects of success.

The main function of the Royal Aircraft Establishment is to supply a centre where full scale aeronautical research of all kinds can be conducted in close connection with the theoretical and model investigations which are carried out both at the Establishment and at the National Physical Laboratory at Teddington. The provision for the Establishment has risen from £390,000 to £407,000. This increase is mainly accounted for by capital improvements, including the provision of auxiliary power plant and modifications required in the spinning tower. A seaplane testing tank, in which models of seaplane hulls and floats can be tested at higher velocities than have hitherto been possible in the Froude marine tank at the National Physical Laboratory, will be begun this year. The Froude tank has only been available for short periods for aeronautical research, and, being designed to use marine models travelling at speeds proportionate to those of surface shipping, can only be adapted to the high velocities attained with modern seaplanes by the use of undesirably small models. The new aeronautical tank will enable larger models and higher speed conditions to be studied with greater accuracy, and will provide more adequate facilities for dealing with the increasingly heavy programme of seaplane experimental work. By this means experiments on full-sized machines can be carried out to the best advantage, and undue cost and danger to personnel thus avoided.

Another scheme with similar objects in view is the variable

density wind tunnel which is to be constructed at the National Physical Laboratory for the purposes of aeronautical research. In this form of wind tunnel, which has been found of great value in the United States, the atmospheric density, which is one of the variables affecting the characteristics of aerofoils and aerostructures, can be increased so as to obtain from models data which are more directly comparable with full scale conditions. Provision for this item is taken in Vote 4.

Research upon autogyros has continued, and an experimental machine has made a cross-country flight of 35 miles, the longest cross-country flight yet to the credit of an aircraft of the rotating wing type. New light has been thrown on the forces involved in the autogyro system by two minor accidents which have occurred to the "windmill," and these are being investigated theoretically and by experiments in the wind tunnel.

Airships

One of the fundamental ideas of the programme under which R.100 and R.101 are being constructed has been to base design on sound aerodynamic principles and to simplify construction while increasing the size. The considerable difficulties which have been met with in pursuance of these objects have prolonged the period of construction originally anticipated, but these are being satisfactorily surmounted and the completion of both airships and their flying trials in this country are provided for in these Estimates.

The hull structure of R.100, which is being manufactured by the Airship Guarantee Company at Howden, is now complete; the gasbags have been manufactured, as has the greater part of the outer cover; and the equipment of the passenger quarters is now in hand. There remains the fitting of the outer cover, the completion of the engine and control cars, the fitting of the fins and control surfaces, together with the installation of the controls, fuel and ballast system, gas valves, mooring gear and similar items. The fitting of the outer cover and preliminary trials of the engines in the first engine car will begin shortly. The power plant will consist of six Rolls-Royce "Condor" engines.

The main girder work for R.101 (which is being built at the Royal Airship Works at Cardington) is being manufactured by Messrs. Boulton and Paul, Ltd., of Norwich. Certain difficulties arising out of the novelty of the design have caused delay, but manufacture is now approximately 60 per cent. complete, the assembly of main components is in hand, and good progress has been made with the minor components such as control and power cars, which are being manufactured at Cardington. A feature of the design is that much of the installation of fuel and ballast tanks, gangways and similar equipment can be carried out on the ground before the transverse frames are erected in position. Full advantage is being taken of this in order to minimise the amount of work to be done aloft in the shed. A new type of heavy-oil compression ignition engine has been developed by Messrs. Beardmore to serve as power plant for this airship.

At the Imperial Conference of 1926, H.M. Governments in Canada and South Africa each undertook to erect a mooring tower base to enable demonstration flights to be carried out by the two new airships to their respective territories. Representatives of the airship, meteorological, and works staff of the Air Ministry were accordingly sent to assist the Governments of Canada and South Africa with regard to the selection of suitable sites. A site for the purpose has been acquired by the Canadian Government near Montreal, and a decision will shortly be made by the South African Government with regard to a site in South Africa.

At the request of H.M. Governments in Australia and New Zealand, the mission which visited South Africa proceeded to these Dominions and carried out similar investigations, with a view to future development. Opportunity was also taken of the journey to South Africa and Australia to inspect possible sites for intermediate bases in West and East Africa, Ceylon and other Crown Colonies.

In Australia the Commonwealth Government has decided to acquire the land necessary for setting up the first airship base in that country in anticipation of future developments, and also to extend its meteorological services to meet the possible requirements of such operations in the future. The Government of New Zealand is making arrangements for a similar extension of its meteorological services.

Good progress has been maintained with the various works services at home and overseas. The erection of a second shed at the Royal Airship Works, Cardington, which was recommended by the Imperial Conference, 1926, was begun in July last, and should be completed in readiness for the flying trials of the two new airships. The mooring-tower base at Ismailia, Egypt, is complete, and operational trials

of the mooring-tower gear have recently been carried out satisfactorily, a kite balloon being flown at the mast-head for the purpose. Work on the Indian base at Karachi is well forward, and the construction of the airship shed there should be completed by the early summer of 1928.

The net provision for airships (Subheads N and O, less appropriations-in-aid in Subhead P. 8-11) is £432,000; the corresponding provision made in 1927 was £431,000.

Works

Vote 4 (Works, Buildings and Lands) shows a gross decrease of £457,000. The effect on the building and land purchase programmes of the decision to retard the formation of the Home Defence Force has not hitherto been reflected in Air Votes to its maximum extent. This is shown for the first time in the works vote for 1928, owing to the completion of building schemes which were in hand before the decision, and the fact that, as a result of it, fewer new works have been started and are being started in the immediate future. This year's Vote allows for the commencement of work at two new stations; also for commencement of work at Hendon on accommodation for one regular and one non-regular squadron. The station at Catterwater, which has been closed down for some years, will be reopened to accommodate a flight of flying-boats, and provision is made to cover small alterations and improvements required.

It is proposed to commence during the year the permanent buildings of the Cadet College at Cranwell, and money is accordingly taken for a first modest instalment of this long-overdue work. The accommodation hitherto provided, consisting of war-time buildings of a temporary character, has been unsuitable in lay-out, design and construction, and is consequently very uneconomical in use. Replacement by more worthy buildings, which has been postponed for a decade, has now become, if indeed it has not been for some time, one of the most urgent necessities for the future well-being of the Royal Air Force.

The total net provision for services in Iraq, Palestine and Transjordan shows a reduction of £46,000, as compared with 1927. A factor which has substantially contributed to this result is the large reduction in cost of maintenance which it has been possible to effect in Iraq.

In view of the reduced total of the Vote, the overall deduction to discount unforeseen delays has been fixed at £150,000, as compared with £200,000 in 1927.

Civil Aviation

Though there is a net reduction on Vote 8 as a whole, there is an increased provision for subsidies. This has been found by allocating to this subhead a substantial part of the savings which it has been possible to effect on works services. The construction of new buildings, etc., at our main civil aerodrome at Croydon, which has been proceeding for some time past, is nearing completion. The provision of an up-to-date air terminus, and an aerodrome so arranged and extended as to enable aircraft to take off and land with an ample margin of security in all conditions of wind and weather, is a matter of congratulation to all concerned in civil aviation, and marks a notable stage of progress in the development of British air transport. The Vote is in consequence relieved of a great part of the capital charges falling on it in the current year. A sum of £30,000 is, however, taken to complete the work in 1928; and a further sum of £35,000 has also been included for the purchase of part of the Waddon Aircraft Factory which adjoins the aerodrome, as an economical means of supplementing the hangar accommodation there.

The increase on the subsidies subhead is designed to provide for a further development during the coming year of the existing air transport services with the ultimate object of establishing an Imperial air-mail route to India and the East. This project will involve the revision and extension of existing agreements, but the matter has not yet been carried far enough to enable any formal document or statement of terms to be laid before Parliament. The provision made is based on the assumption that an extended service will be inaugurated towards the latter part of the financial year.

The existing subsidised European services of Imperial Airways, Ltd., have been carried on with increasing success during the past year. The use of more powerful aircraft, with a consequent reduction of operating costs per ton-mile, has afforded a development on the lines which it has been the policy of the Air Ministry to encourage. The service in the Middle East, subsidised under the Agreement of October 28, 1926 (Cmd. 2758), has been curtailed by the refusal of the Persian Government to allow Imperial Airways, Ltd., to operate along the northern shores of the Persian Gulf, and the consequent omission, pending the development of an alternative route, of the section Basrah-Karachi. A weekly service

over the section Cairo-Baghdad-Basrah has accordingly been operated in lieu of the fortnightly service to Karachi originally projected. Very valuable lessons have been learned from this interim service, which has been conducted with extreme regularity, and may well serve as a model to the Air Transport of the world, and an encouragement to the further development of British imperial routes.

Provision is made in the Vote this year for subsidies to light aeroplane clubs under a new scheme of financial assistance which has been based on payments according to the number of members trained as pilots and the amount of flying done, up to a maximum of £2,000 in all per club. The number of clubs approved to participate in this scheme has been increased from 6 to 13.

Meteorology

In previous years, provision for meteorology has been divided between Vote 10 (Headquarters) and Vote 9 (Outstations, Instruments, &c.). In view of the essentially interdependent character of the whole organisation it has been thought preferable this year to give a comprehensive view of all meteorological expenditure and receipts in a first section of Vote 9.

The combined figures show an increase of £9,000 over the corresponding figure for last year, allowance being made for an anticipated increase in receipts of £1,000. The increase arises almost entirely from the growing demand for meteorological information made by aviation in its various branches.

Provision is taken for the establishment of an additional meteorological station—postponed from last year—in connection with the Home Defence Force, bringing the total number of such stations on Royal Air Force aerodromes in the British Isles up to 11. Meteorological services in the Middle East for which formerly officers and airmen of the Royal Air Force were employed are now carried out by civilian members of the Meteorological Office. The airships division is preparing a special forecasting organisation in readiness for the trials of R. 100 and R. 101, and is also investigating meteorological conditions along the routes over which it is proposed to fly.

Air Ministry

Vote 10 (Air Ministry) shows a decrease of £30,000 on the total for the current year. Reference has already been made to the transfer to Vote 9 of provision for the Headquarters staff of the Meteorological Office; and the opportunity has also been taken to follow the Army practice by taking provision for the Air Ministry Publications Depot under Vote 1. The resultant decrease has been largely counter-balanced by the loss this year of an appropriation-in-aid from the Middle East Vote in respect of the cost of the local audit staff stationed in Iraq and Palestine.

A saving of £7,000 has been effected by various administrative economies and the automatic rise in this Vote, due to annual increments of pay under approved scales, has thus been largely offset.

SIR SAMUEL HOARE'S AIR ESTIMATES SPEECH

IN his speech introducing the Air Estimates in the House of Commons, on March 12, Sir Samuel Hoare, Secretary of State for Air, elaborated certain statements made in the Memorandum on the Air Estimates. Space does not permit of giving the speech in full, but following are some extracts which we regard as being of special importance.

On the subject of airships, Sir Samuel Hoare outlined the main advantages which it was hoped to gain if airships prove capable of doing what is expected of them. The problem, he said, was quicker Imperial communications. Heavier-than-air craft would not find the complete answer, among other things, because of their need to land upon foreign territory on the way to parts of the Empire. The airship, on the other hand, could fly night and day, could use the "trades" and other favourable winds, and with a range of 2,000 or 3,000 miles, need never make use of foreign territories in its journeys from one part of the Empire to the other. He admitted that the difficulties were great, and that it might need years of effort before success was achieved. "None the less," Sir Samuel continued, "I say that with so much to gain, it is not only worth making the experiment, but it is incumbent upon any progressive Government to make it." To those critics who profess to believe that the difficult airship work is being undertaken in a light-hearted way, the following sentence from Sir Samuel Hoare's speech might with advantage be perused: "When I have been to Cardington and to Howden," Sir Samuel said, "I have been constantly struck with the sober and resolute attitude of the men who are designing and building the two airships. They believe in the future of airships, but they fully realise the difficulties that surround the experiment. They believe that they are surmounting the difficulties. Let us leave them to finish their great work in peace, and let us judge the experiment not by the claims of the fanatics on either side, but by the actual results that it will show. If it succeeds, Great Britain will have led the way with a revolutionary instrument of transport that will create a new industry within these shores, and that will bring the furthest capitals of the Empire within a fortnight of London."

Concerning future civil aviation policy, Sir Samuel Hoare had a good deal to say, and as the new policy outlined is likely to have far-reaching effects, we give below some of the outstanding points raised:

"For some time past certain aspects of civil flying have impressed themselves upon our attention. As the experience of the Imperial Airways company became wider, so it became clear that the existing agreement between the Government and the company needed readjustment. Experience had convinced us that both on political and on commercial grounds, the services should be primarily Imperial, rather than primarily European. The longer the route, the greater the saving in time, and the more likely a substantial revenue from mail and freight. The more Imperial the service, the greater its use for giving the Empire a closer physical unity. This, then, has been the first lesson that we learnt from the

experience of the last few years. And the second is that if Civil Aviation is to be self-supporting, new types of machines and engines must be brought into use at comparatively short intervals. I can illustrate what I mean in a sentence by a comparison between the cost of a civil air transport machine of 1922 and one of the latest types brought into service. In 1922 the running cost per ton-mile was 4s. 2d., today, the corresponding figure for the latest type with three engines is 1s. 10d., a very striking and hopeful reduction, as I am sure the House will agree. The newest type is actually paying its 'prime costs' of operation as apart from standing charges. If, at regular intervals, further new types can be introduced, we can foresee a time, not so very far distant, when civil flying will no longer need subsidies. Under the present agreement, however, there was neither the time nor the money for these improvements to be made. The result was that the object of the Government was being frustrated. We were giving subsidies for one object and one object alone, namely, to make civil aviation self-supporting, and experience was showing us that without a longer contract and the means for changing over quickly into more economic types of machine, we should still at the end of the ten years' period of the contract have failed to achieve our object. The result has been that after a full enquiry into the whole question we have decided to enter into a new agreement with Imperial Airways that will take the place of the existing agreement and that will be based upon three main conditions. In the first place, the organisation of a weekly mail service to India, which will bring Delhi within seven days and Calcutta within nine of London—a saving of ten days on existing mail communications; in the second place, a subsidy that will enable the Company to substitute regularly new for old types of machines, and thirdly, the right of the State to share in any ultimate prosperity that the Company may obtain. The details of the agreement are still under discussion with the Government of India and the Company. I take, however, this early opportunity of giving the House an outline of our new proposals and of telling Hon. Members that I will lay the contract as a White Paper as soon as it is ready."

On the subject of new machines and engines Sir Samuel said:

"If we compare the performance of our new machines and engines with the machines of five or ten years ago, we can judge of the extent of this progress. It may interest Hon. Members to have a few examples of what has already been achieved.

"In the first Schneider Cup Contest after the war, the winner's speed was 107 miles an hour; in 1927 it was over 280 miles an hour, or very nearly three times as fast. The most modern types both of air-cooled and water-cooled engines develop more than twice the horse-power of the corresponding engines in use in November, 1918, whilst the weight horse-power ratio has been improved simultaneously in each case by about 25 per cent. The period for which these engines can be run between overhaul—a most important

actor this from the point of view of economic maintenance—has also been increased by no less than 300 per cent.

"Speaking generally, I can say that in the matter of metal construction we are definitely ahead of foreign countries. We are definitely ahead of them in our use of steel, and we are definitely ahead of them in our efforts to overcome the risk of metal corrosion. This state of affairs is to the credit of the Research Department of the Air Ministry and the enterprise of certain British firms.

"We are, in these Estimates, taking a long step in advance with the development of flying-boats. We are proposing to form two new flying-boat flights, and, in addition, to these units, we are setting aside a substantial sum of money for experimental military and civil flying-boats. I myself had an opportunity this summer of testing the merits of certain

new flying-boats when I took part in the flight that four of them made over the North Sea and in the Baltic. Having travelled many thousands of miles in land machines, it was an interesting experience to me to make a long journey in these boats.

"I am glad to think that in these estimates we are making provision for the biggest flying-boat programme that we have had since the later days of the war. We are creating two new flying-boat units, and we are laying down no less than six new flying-boat types.

"I hope that I have said enough to show that the development of long-range flying-boats for both military and civil purposes is one of the central items in the programme, of which those estimates are the outward and visible sign."

As "the seaplane paper," *FLIGHT* welcomes this statement.

FLIGHT-LIEUT. KINKEAD

It is with the utmost regret that we have to announce the death of Flight-Lieut. S. M. Kinkead, D.S.O., D.S.C., D.F.C., who was killed on March 12, while making an attempt on the world's air speed record in the Supermarine-Napier S.5 seaplane. The machine, for reasons as yet unexplained, suddenly dived into the Solent from an altitude of about 100 ft. while Flight-Lieut. Kinkead was flying over the measured course, and immediately sank without leaving a trace of man or machine other than just a few small pieces of wreckage.

Flight-Lieut. Kinkead had been waiting at Calshot some ten days for an opportunity to beat the 297 m.p.h. set up last November by the Italian pilot, Maj. de Bernardi. Weather conditions, however, were by no means favourable most of the time, and only once did he get a chance to make a trial flight, which was entirely successful.

On the morning of March 12 conditions seemed favourable for a flight, but an oil leak developed, and by the time this was set aright, the weather had broken up. All through the afternoon a snowstorm rendered a start hopeless. Then, shortly after 4 p.m. conditions changed entirely, and it was calm and sunny. Lieut. Kinkead therefore decided to make an attempt and the S.5 was brought out once more. After a preliminary run of the 875 h.p. Napier "Lion" engine the pilot packed himself away in the tiny cockpit and the seaplane was launched into the water.

Besides the official timekeepers, a number of spectators were present to witness the attempt. Amongst these were several foreign Air Attachés, Capt. H. C. Biard, Mr. R. J. Mitchell, designer of the machine, and many other prominent figures in aeronautics. With little if any wind to help him, Flight-Lieut. Kinkead experienced some difficulty in getting the S.5 off the water, but once in the air the machine flew well at terrific speed. After a short circle round, Flight-Lieut. Kinkead brought the machine down and made an absolutely perfect landing, thus complying with the regulations which demand that the machine attempting the record must make two alightings to prove its seaworthiness—the first landing was made the previous day.

Although, by this time, a mist was forming over the water, Lieut. Kinkead immediately took off—again with some difficulty—once more, this time obviously with the intention of making the attempt on the record. The S.5 soon disappeared from view in the direction of the Isle of Wight, and then after a short interval was observed as a tiny speck rapidly approaching Calshot, the scream of its engine getting louder and louder.

When about two miles from the station, near Calshot Lightship, all who were intently watching were horrified to see the machine plunge suddenly, nose first, into the sea. A huge column of water rose into the air as the machine struck, and when this subsided, not a trace of the S.5 was visible. To add to the terrible effect of this disaster, the scream of the engine came across the water for what appeared to be an appreciable time after the machine disappeared from view.

Motor boats and launches at once rushed to the spot, but no trace of the machine nor the unfortunate pilot—who must have been killed instantly by the terrific impact with the

water—could be found. It is stated that the machine must have been lying in some 45 ft. of water.

The cause of the disaster is at present unknown.

Various theories have been advanced, and many of them are very plausible. It should, however, be realised that conditions were such that it would not require anything radically wrong to cause the disaster. There is no reason to believe that anything did go wrong with either machine or engine; Kinkead was, according to accounts, flying at a height of something like 100 ft. when the accident happened. His speed was in all probability well over 300 m.p.h. This represents a velocity of about 450 ft. per second. Allowing for a very short time in which the machine changed its horizontal course into one sloping downward, it might well strike the water within a period of considerably less than one second from the time it commenced to depart from a horizontal flight path. Thus even a very momentary disturbance of any sort might well have caused the disaster. It has been suggested, quite seriously, that if the pilot were to sneeze, this might in itself cause him to depress the elevator sufficiently to make the machine swoop down into the sea. With so small happenings as possible causes of the accident, it will be extremely difficult to form any opinion of what actually happened.

Salvage operations started on Tuesday, but it is doubtful if the wrecked machine, recovered later with the body of the pilot, will be in a condition to throw any light on the matter.

Flight-Lieut. Kinkead was a South African and was 31 years old. He was educated at the High School, Johannesburg, and at Marist College. He joined the R.N.A.S. in 1915 and during the war saw flying service in the Dardanelles and in the Dunkirk area. In June, 1917, he was promoted Flight-Lieut. R.N.A.S., and on the formation of the R.A.F. was granted a permanent commission as Flying Officer, reaching the rank of Flight-Lieut. in January, 1922. After the war he was responsible for the ground organisation on the Northern Sector of the first R.A.F. Cairo-Cape flight, and later was an instructor at No. 5 Flying Training School, Sealand. Last year he was one of those selected for the High Speed Flight at Felixstowe, in connection with the Schneider Trophy Contest, in which he flew the Gloster-Napier machine.

For his war services he received the following decorations.—D.S.O., for attacking and dispersing a Cavalry Division in South Russia. D.S.C., for conspicuous gallantry and skill in face of enemy in aerial combats. Bar to D.S.C., for attacking and bringing down an Albatross machine. D.F.C., for attacking enemy formations superior in numbers. Bar to D.F.C., for engaging and dispersing a large party of enemy troops in a wood.

The King has sent the following message to Sir Samuel Hoare, the Air Minister:—

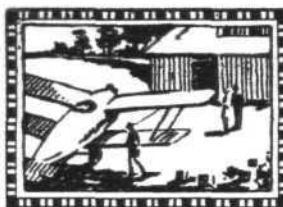
"I am grieved to learn of the loss sustained by the Royal Air Force in the tragic death of Flight-Lieut. Kinkead, who had such a distinguished career in the Service. Please convey to the relatives of the gallant airman an expression of my sincere sympathy.—GEORGE R.I."

28th Squadron (R.A.F.) Old Boys' Association

THE above Association is holding its half-yearly function on March 24. This will take the form of a Social, at Slater's Restaurant, 34-35, High Holborn, commencing at 6.30 p.m. Tickets, 3s. single; 5s. 6d. double, inclusive of refreshments. The annual dinner was a splendid success—there being 34

present, with Lieut. Shanks in the chair, the vice-presidents being represented by Capt. Mitchell and Capt. Mulholland. It may be of interest to note that both Capt. Bert Hinkler—who recently flew to Australia in 15½ days, and Capt. Malcolm Campbell—who put up the world's speed record for motor cars—were members of this squadron.

PRIVATE



FLYING

A Section of **FLIGHT** in the Interests of the Private Owner, Owner-Pilot, and Club Member

AN OWNER ON THE WESTLAND "WIDGEON"

MR. "HAROLD BROOKLYN" is a private owner of a Westland "Widgeon III" (Genet Mark II engine), which he registered on July 11, 1927, as G-EBRQ. He has just completed 100 hours flying in it during the last eight months, and records his impressions here. These have a particular value, because Mr. "Brooklyn" is a pilot of long experience and a private owner for a pastime. He says that his nerves would not stand the present day traffic on the roads, whilst as a driver he saw nothing of the countryside. This decided him to become a light aeroplane owner.

The Machine

For many years past he had definitely proved to himself the enjoyment and use of flying and when the light 'plane showed that it could be run as cheaply as a car, his choice was made. After considerable deliberation, a parasol monoplane, the Westland "Widgeon," was chosen. The chief reasons for this decision were the door to the passenger's seat, large luggage capacity and absence of rigging. For a small machine he thought that an air-cooled engine was essential because it was simpler and cheaper. As the Armstrong-Siddeley "Genet" engine was the latest low-powered aero engine on the market then, and specially designed for his choice of aircraft, he thought it was the best available.

Its low weight per horse power, modern design and accessibility were main factors, and during eight months' running its reliability and economy have been fully up to expectations. This engine has a big future, he believes.

He had one forced landing owing to a broken oil gauge pipe,

due to his own impatience, and one due to water in a magneto distributor. But there have been no failures of the engine. It is extremely easy to start even in 19 deg. of frost, and very economical. He did 1 hr. 15 mins. on four gallons of No. 1 mixture without faking the carburettor, and the average consumption was slightly less than four gallons per hour. He has also flown on straight French petrol. Oil consumption amounted to about one pint per hour. Full revolutions were 2,025 per minute, but he could cruise at about 65 m.p.h. at 1,550 revs. with two people up, so that there was ample power in hand. Normal revolutions of 1,700 revs. gave a cruising speed of 80 m.p.h.

Manœuvrability

Aerobatics were possible with little strain affecting the machine fitted with such a light engine. It was particularly delightful to fly after flying Service types of aircraft, and there was a total difference in the amount of room available, stability and freedom from gadgets. Other pleasures were the small amount of refilling required and lack of responsibility. The "Widgeon" has a very flat gliding angle and Mr. "Brooklyn" found it difficult to come in to land slow enough at first. It did not sideslip, so better judgment was required in the approach.

As he discovered later that it could be manœuvred about like a bicycle he got over the difficulty that way. The elevator loading was a finer adjustment for hands-off flying than most adjustable tail planes, and the machine was very stable laterally.



THE AIR CAMPERS : This idyllic picture shows one of Mr. "Harold Brooklyn's" camping spots during one of his air tours in this country. He does not reveal the identity of the spot, and perhaps he is wise, for his choice is so excellent that it might quickly be followed. The two figures are seated in the collapsible rubber boat which was used during the night as a bed. The tent is 7 ft. by 5 ft., and other equipment taken to last two people a fortnight included bedding, stove and cooking utensils. All the gear was carried in the Westland "Widgeon" beside Mr. "Brooklyn" and his passenger.

He had drift markings on the V-struts which worked extraordinarily well, enabling very accurate air pilotage for so light a machine. In normal weather, a pilot could lay off his course on a map whilst flying. For view, the pilot's position was excellent and the passenger had a good view below.

Before receiving the Westland "Widgeon," Mr. "Brooklyn" was nervous about it blowing over on the ground in a high wind, and he has subsequently been agreeably surprised that it showed no such tendency. Folding of the wing could be done quicker than with a biplane as there were only two bolts and no jury struts. This was a consideration when folding for housing.

Most evolutions, including looping and rolling, could be performed and the machine spun each way, but not too fast, and came out quickly. It was difficult to keep inverted and when in that position it was very sensitive on the controls. Aileron control was very effective, and the machine could be "sunk" well under control.

Air Tours

Among several delightful trips carried out by Mr. "Brooklyn" was one to Edinburgh and one to the Norfolk Broads, with enough camping equipment and luggage to last two people for a fortnight. This equipment included a small tent, 7 ft. by 5 ft., a collapsible rubber boat, used as a bed at night, and a bath (not chest of drawers) by day. Bedding, stove, and cooking utensils were also carried.

When landing away from aerodromes, the tourists found the farmers most genial and hospitable. If the machine was picketed near a gate, the curious-minded had not to

break hedges. For peace, however, the tent was pitched away from the monoplane.

The possibilities of camping by air, says Mr. "Brooklyn," are immense, because the world lays before one. Africa, India, and the Continent are all within reach at no great expense. Petrol dumps are everywhere. He says that, unfortunately, as he is compelled to receive pay from His Majesty's Government, he is tied to some extent.

The longest trip was made in an attempt to reach Venice to see last year's Schneider Trophy Race. Leaving the day before the race was to have been flown, he reached Mount Cenis Pass, and was forced to turn back after rising to 13,000 ft. with six hours' of petrol on board. He was 1 hour 10 minutes flying 30 miles. Eight hours' petrol was carried, and 1,200 miles were covered in three days in 19 hours' flying time.

Most of Mr. "Brooklyn's" 100 hours as a private owner were flown in England and in bad weather. Flying has been convenient to him for getting away to hunt when the Meets have been at a distance. He has not insured the machine against damage or third-party risks because he is an experienced pilot and takes reasonable precautions. The premiums are very expensive. In five years, he remarks, one could buy a new machine for the amount spent on premiums.

Mr. "Brooklyn's" wife is usually his passenger and would prefer to have the passenger's seat totally enclosed owing to her dislike of the discomfort of wearing flying helmet, goggles, and telephones. There should be no difficulty, he thinks, in doing this on the Westland "Widgeon," as it has a door for entrance. There was no reason why comfort in the air should not compare favourably with that in a good-class car.

ECHOES OF THE AUSTRALIAN FLIGHT

The King Honours "Bert" Hinkler

HIS MAJESTY THE KING has approved the award of the Air Force Cross to Mr. "Bert" Hinkler in recognition of his distinguished services rendered to aviation by his flight to Australia from England. He already holds the D.S.M. for war services.

Resuming the Australian tour he reached Brisbane from Bundaberg on March 6, where, amongst other honours, he was the guest of the Queensland Cabinet at a private dinner on March 8. During that day he also visited the offices of the *Brisbane Courier* and was presented with a cheque for £1000, as the first instalment of a fund raised by that newspaper. In the afternoon he was entertained by the Brisbane Club.

He left Brisbane at 6.30 a.m. on March 11 for Sydney, a distance of about 500 miles, and his progress was signalled by coastal stations. An intermediate landing was made at Newcastle where, during a brief stay, he had lunch. The flight was resumed at 2.30 p.m. and his subsequent progress to Mascot aerodrome, Sydney, was broadcast to the huge crowd waiting there. At 3 p.m. ten aeroplanes left the aerodrome to meet him at Narrabeen, a watering place, about 15 miles north of Sydney. When the Avro "Avian" with its aerial escort appeared out of the clouds to the north shortly before 3.30 p.m. there was a roar of cheers from 50,000 people, amplified with the noise of a thousand Klaxons.

He landed exactly to time and almost in front of the reception platform, where Mr. Bavin, the Premier, and others, greeted him. The people on the platform obscured Hinkler from the public view and a loud cry went up in protest, urging all the visitors to leave the platform. Hinkler himself finally solved the problem by mounting a ladder. The Government House was next visited and a welcome extended by Sir Dudley De Chair, the Governor, and Lady De Chair. In the afternoon he flew over Sydney with a lady passenger who had been nominated by the subscribers to the fund, raised by the newspapers, to perform the presentation of cheques which were for sums of £900 and £600 respectively.

In the evening a great reception was given him in the Sydney Stadium and then followed an entertainment in his honour by a thousand "diggers" and their wives in the Town Hall.

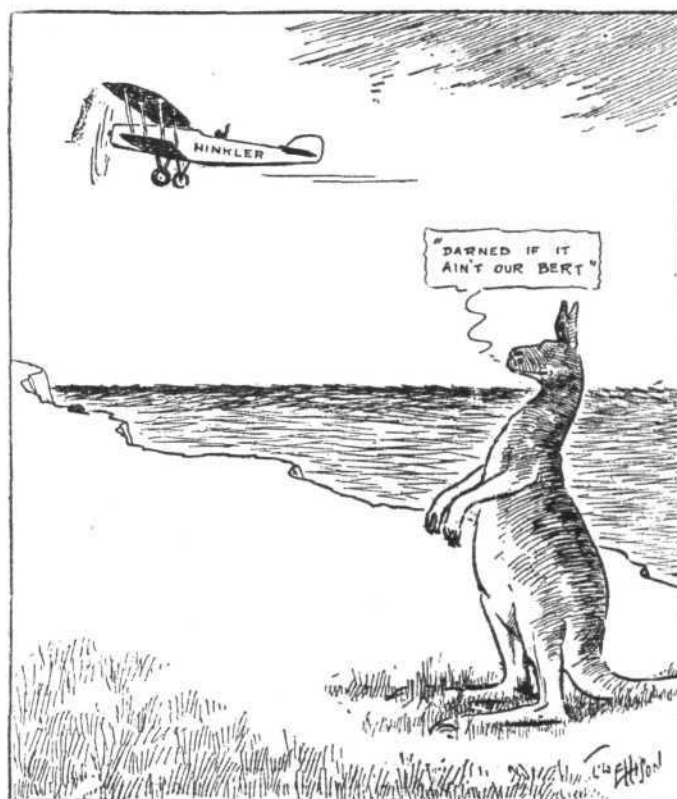
The total flying time taken to reach Sydney from London was 144½ hours. By the way, the Palmer tyres of the Avro "Avian" contained the same air that had been pumped in in England.

Cheques for £2,000 each will be presented to him by the New South Wales Government and Federal Government respectively. Grants from Federal and State Governments

and various newspaper funds will, it is stated, total between £8,000 and £10,000.

Mrs. Hinkler has left this country for Australia to join her husband and will be the guest of the Orient Line on the voyage.

There are still conflicting reports about the pilot's future plans. Lieut.-Col. Brinsmead, Controller of Civil Aviation, who returned to Melbourne after welcoming him, stated that the report that the Commonwealth contemplated retaining Mr. Hinkler's services is without foundation. He had never suggested that the Government should make an offer. It



"Some Hop."

By courtesy of the "Birmingham Mail."

was reported on March 11, however, that when visiting Canberra he will be offered an appointment as Assistant Director of Civil Aviation. Hinkler is reported as declaring a desire to remain in Australia if his services could be accepted, and, alternatively, that he would only remain for six months.

Mr. McCormack, Premier of Queensland, replying to an inquiry, said he was personally in favour of a title being conferred on Hinkler, but that the Labour Party policy was hostile to titles.

The Royal Aero Club of the United Kingdom, is to present the pilot with a bronze bust of himself, the background of which will be modelled on the lines of his Avro "Avian". It will be the work of Mr. Otakar Steinberger, who will make no charge.

Sydney entertained him royally. He was engaged all day fulfilling engagements. On March 14 he reached Canberra amidst immense enthusiasm, and was received by Mr. Bruce, the Prime Minister.

LIGHT 'PLANE CLUBS

London Aeroplane Club, Stag Lane, Edgware. Sec., H. E. Perrin, 3, Clifford Street, London, W.1.

Bristol and Wessex Aeroplane Club, Filton, Gloucester. Secretary, Capt. C. F. G. Crawford, Filton Aerodrome, Patchway.

Hampshire Aero Club, Hamble, Southampton. Secretary, H. J. Harrington, Hamble, Southampton.

Lancashire Aero Club, Woodford, Lancs. Secretary, C. J. Wood, Oakfield, Dukinfield, near Manchester.

Midland Aero Club, Castle Bromwich, Birmingham. Secretary, Maj. Gilbert Dennison, 22, Villa Road, Handsworth, Birmingham.

Newcastle-on-Tyne Aero Club, Cramlington, Northumberland. Secretary, A. H. Bell, c/o The Club.

Norfolk and Norwich Aero Club, Mousehold, Norwich. Manager, F. Gough, The Aerodrome, Mousehold, Norwich.

Nottingham Aero Club, Hucknall, Nottingham. Hon. Secretary, Cecil R. Sands, A.C.A., Imperial Buildings, Victoria Street, Nottingham.

The Scottish Flying Club, 101, St. Vincent Street, Glasgow. Secretary, Harry W. Smith.

Southern Aero Club, Shoreham, Sussex. Secretary, C. A. Boucher, Shoreham Aerodrome, Sussex.

Suffolk Aeroplane Club, Ipswich. Secretary, Courtney N. Prentice, "Hazelde", Stowmarket, Suffolk.

Yorkshire Aeroplane Club, Sherburn-in-Elmet, Yorks. Secretary, Lieut.-Col. Walker, The Aerodrome, Sherburn-in-Elmet.

LONDON AEROPLANE CLUB

REPORT for week ending March 11:—Flying time 28 hrs. 30 mins. Dual instruction 19 hrs. 20 mins.; solo flying 9 hrs. 10 mins.

Dual Instruction: (With Capt. F. G. M. Sparks): G. Black, Miss Fletcher, A. Mines, Miss H. Cholmondeley, A. Mason, Miss O'Brien, W. H. Lane, D. S. Schreiber, P. A. Wills. (With Capt. S. L. F. St. Barbe): A. O. Wiggell, A. L. Petty, C. Peckham, J. A. Crane, J. A. Brewster, J. A. Murphy, Miss Wilson, W. H. Lane, H. Sutton, Miss V. Cholmondeley, A. Mason, E. Davis.

Solo Flying: J. J. Hofer, R. Sanders Clark, C. E. Murrell, Miss O'Brien, C. Paul, H. Solomon, W. Hay, B. B. Tucker, W. B. Michelmores, A. F. Wallace, W. L. M. O'Connor, H. M. Samuelson, G. H. Craig, G. W. Hall, J. A. Brewster.

Passenger Flights: (With Capt. Sparks): Mrs. Brewster, Miss Stewart, Mrs. Davis. (With G. H. Craig): S. C. Bradshaw. (With Will Hay): Master Hay.

BRISTOL & WESSEX AEROPLANE CLUB

REPORT for week ending March 10:—Total flying time, 25 hrs. 30 mins. Dual instruction, 10 hrs. 55 mins.; solo, 7 hrs. 30 mins.; passenger flights, 7 hrs. 5 mins.

Under Instruction: Major Hume, Messrs. Garnett, B. L. Bathurst, Roberts, Gibaud, Stephens, Greenhill, Girdlestone, Kennan, H. C. H. Bathurst, Walwin, Tanner.

Soloists: Messrs. Downes-Shaw, Bathurst, Tratman, Hall, T. H. Clarke, Roberts, Arnold, O. P. Jones.

Instruction (With Mr. Holmes): Mr. Stephens. (With Mr. Tratman): Mr. Stephens.

Passengers (With Mr. Hopper): Mr. Roberts. (With Mr. Bathurst): Mrs. Stable, Lady Gwynne-Evans. (With Mr. Downes-Shaw): Mr. Smith.

The arrangements for our Pageant on May 5 are proceeding satisfactorily. The three first machines in the first race will score points in the Inter-club Competition for the Society of British Aircraft Constructors' Challenge Cup. Detailed information regarding the programme and conditions of entries will be issued shortly.

Mr. Downes-Shaw, with Mr. Jopp, set out from Filton to Stag Lane, but on meeting with fog near Uxbridge they landed in a field, telephoned to Croydon for weather conditions, and visited that place instead.

HAMPSHIRE AEROPLANE CLUB

REPORT for week ending March 11

	hrs.	mins.	Totals for February.	hrs.	mins.
Flying time	17	20	93	25	
Solo	2	25	46	55	
Dual	11	40	30	55	
Passenger flights	2	25	13	5	
Tests	—	50	2	30	

Instruction (With Flt.-Lieut. Swaffer, M.B.E.): Mr. Powell, Miss Grace, Mr. Curtis-Nuthall, Lieut. Richardson, Lieut. Collier, Mr. Rayson, Mr. Perfect, Mr. Wood, Mr. Gillett, Lieut.-Comdr. Coveney, Messrs. Bull, Scott-Hall, Pearce, Westlake, Dickson, Courtney, Graham-Gibbs.

Passengers (With Flt.-Lieut. Swaffer): Mrs. Ball, Miss Mott, Mrs. Graham-Gibbs, Mr. Rosevear, Mr. Ball, Mr. Doxat-Kelly.

Soloists: Capt. Kirby, Rev. Fawkes, Mr. Perfect, Don J. de la Cierva, Mr. Rayson, Lieut. Fagan, Lieut. Oliver, Mr. Bowen, Mr. Parker.

Passengers (With Capt. Kirby): Capt. Lovett, Mr. Morden, Mr. Mott.

Owing to the cold N.E. wind, members have not turned up in very great numbers this week, Saturday was extremely cold, and Sunday we only managed to get in a few hours between the heavy falls of snow. Despite the cold day, those members who did turn up all got a flight and seemed to enjoy it.

LANCASHIRE AERO CLUB

REPORT for week ending March 3:—Flying time, 21 hrs. 45 mins. Instruction, 8 hrs. 25 mins.; solo flights, 6 hrs. 55 mins.; passenger flights, 5 hrs. 25 mins.; tests, 1 hr.

Instruction (With Mr. Baker): Messrs. Cohen, Benson, Tweedale, Eills, Weale, Stern, Brooking, Greenhalgh, Secker, Browning, Mills, Watson, Stross, Miss Emery and Miss Hill. (With Mr. Cantrill): Messrs. Davison, Goss, Harber, Mangnall, Stern and Miss Baerlein. (With Mr. Scholes): Messrs. Crosthwaite, Riley and Davison.

Soloists (under instruction): Messrs. Hall, Cohen, Ruddy and Gerrard. Pilots: Messrs. Meads, Caldecott, Browning, Lacayo, Michelson, Williams, Chapman, Twemlow and Gattrell.

Passengers (With Mr. Michelson): Mr. Browning. (With Mr. Cantrill): Mrs. Ruddy, Miss Fallon, Messrs. Faulkner, Wilkinson, Johanson, Wilson. (With Mr. Lacayo): Messrs. Sievwright, Tasker, Mills and Caldecott. (With Mr. Meads): Messrs. Benson and Hall. (With Mr. Twemlow): Mrs. Twemlow, Miss Hulze, Messrs. Beard, Smith and Browning. (With Mr. Gattrell): Mr. Thorpe. (With Mr. Baker): Miss Loughlin, Messrs. Faulkner, J.

Faulkner and Jordan (With Mr. Scholes): Miss Brodie, Messrs. Maddock, Hanley, Willing and Seddon.

Bad visibility interfered with flying. Mr. Ruddy made a very sporting attempt to complete his height test, but after reaching 6,000 ft. he lost sight of the aerodrome while descending and had to use his engine to get in. Mr. Meads was also caught in thick weather on a cross-country to Hooton Park and back, but evinced sound judgment and common sense, and after two forced landings to enquire his whereabouts and to wait for clearer weather, he returned to Woodford in safety.

REPORT for week ending March 10:—Flying time, 37 hrs. 30 mins. Instruction, 14 hrs. 15 mins.; solo flights, 11 hrs. 40 mins.; passenger flights, 10 hrs. 5 mins.; tests, 1 hr. 30 mins.

Instruction (With Mr. Baker): Messrs. Johnson, Hardy, Goss, Harrison, Weale, Harber, Brooking, Mills, Crosthwaite, Riley, Benson, Taylor, Parkes, Slack, Sanderson, Watson, Greenhalgh, Secker, Allott, Gort, Cohen, Stern, Stross and Patrieoux. (With Mr. Cantrill): Mr. Goss.

Soloists (under instruction): Messrs. Cohen, Hall, Brooking, Gort, Gerrard and Ruddy.

Pilots: Messrs. Hardy, Gattrell, Twemlow, Lacayo, Crosthwaite, Chapman, Meads, Michelson, Nelson and Browning.

Passengers (With Mr. Scholes): Mrs. Bannister, Mrs. Slater, Miss Disley, Messrs. Nuttall, B. R. Goodfellow, D. R. Goodfellow, Melland, B. Melland, Slater and Disley. (With Mr. Williams): Mrs. Moore, Miss Healey, Messrs. Moore, Garner, Sievwright, Leach, Brunelow, and Mills. (With Mr. Cantrill): The Misses McDougall, Learoyd and Longton. (With Mr. Meads): Mr. Benson. (With Mr. Lacayo): Messrs. Shiers, Tooke, Sievwright and Mills. (With Mr. Twemlow): Mrs. Twemlow and Allott. (With Mr. Gattrell): Mr. Gilbert. (With Mr. Goodfellow): Mr. Cantrill.

Despite intermittent fog at the beginning, and frequent snowstorms at the end of the week, over fifty members have managed to get into the air. Mr. Brooking was launched on a successful first solo, and Messrs. Gerrard and Gort accomplished their height tests. The latter, after being baffled by thick clouds at 5,000 ft., went up a second time and reached nearly 9,000 ft. so as to put the matter beyond doubt. Mr. Hall completed the tests for his "A" licence.

Goodfellow and Cantrill took OK over to Blackpool on Thursday for an executive meeting. They landed on the Squire's Gate ground and report that the work of levelling and clearing the surface is going on apace and that we look like having a first-class aerodrome there for the big Northern Area Pageant on July 6 and 7.

NEWCASTLE-UPON-TYNE AERO CLUB

REPORT for week ending March 11:—Total flying time, 8 hrs. 15 mins. Instruction, 3 hrs. 35 mins. Solo, 25 mins. Tests, 40 mins. "A" pilots, 3 hrs. 35 mins.

The following flew under instruction with Mr. Parkinson: Miss Rambaut, Mr. Lloyd Brown, Mr. Runciman and Dr. Alderson.

Solo (training): Dr. Alderson.

"A" Pilots: Mrs. Heslop, Miss Leathart, Mr. D. Wilson, Mr. N. S. Todd, Mr. A. Bell.

The weather became increasingly bad from Monday throughout the week ending in complete blanks on Saturday and Sunday, when a continuous blizzard prevented any flying.

NORFOLK & NORWICH AERO CLUB

REPORT for week ending March 11:—Total hours flown, 9 hrs. 40 mins. Instruction (with Mr. Fry): Messrs. C. Cullum, W. H. Jewson, A. G. Barrett.

Soloists: Messrs. H. Mack, R. F. Potter, G. Surtees, C. Gowing, and N. Brett.

All the flying this week has been done in the "Moth" as our ground engineer is cleaning up the "Avro" engine. Wintry conditions prevail here now and the aerodrome is under snow. Flying looks hopeless for the next day or so unless a quick thaw sets in.

Eight new Members enrolled during the past week and seven promised to join at the Social held on Friday evening in the Stuart Hall. This is most excellent progress. It is evident that the Club is becoming very popular.

NOTTINGHAM AERO CLUB

REPORT for week ending March 2:—Total flying time, 13 hrs. 20 mins. Total dual time, 6 hrs. 35 mins. Total Solo "A" time, 2 hrs. 5 mins. Total solo (under instruction), 3 hrs. 40 mins. Total passenger time, 35 mins. Total tests time, 25 mins.

Passengers (with Mr. Martin): Messrs. Taylor, Sharp and Jean Quentelot. (with Mr. Wilcox): Messrs. Walter, Ridgway, Mrs. Taylor, Messrs. Barber and Granger. (With Mr. Seely Whitby): Mr. Bootsova.

Dual (with Mr. Martin): Messrs. Glenn, Walter, Coke, Ashworth, Meats, Granger and Austin.

Solo ("A" licence): Messrs. Seely, Whitby, Wilcox, and Cyril Sands.



Solo (under instruction): Messrs. Cox, Blake, Booth, Pilgrim and Coles. Flying restricted to 4 days. M. J. Quentelot, a French Pilot who is at the Nottingham University, had a trial trip with our instructor and expressed his enthusiasm about "Moths."

SUFFOLK AEROPLANE CLUB

REPORT for week ending March 11. Flying time, 4 hrs. 50 mins. Instruction (with Mr. Lowdell): Miss Georgia Rhodes, Miss D. Creasy, K. Peck, H. Billinton.

Soloists: Dr. Jas. Sleigh, Messrs. H. Billinton, K. Peck, C. N. Prentice. This has been rather an unfortunate week. On Tuesday, when summerlike weather prevailed the undercarriage of G-EBRE parted company with the fuselage and landed our over-worked kite on its nose breaking the prop, etc. This hung up all flying but after a great rush and hard work we had her in commission again for the week-end. However owing to snow and blizzards flying was impossible. Despite the weather a large number of our members turned up on Sunday in their usual good humour and spent the afternoon playing rugger.

Don't forget the "On to Hadleigh Cup" Easter Sunday. (Details later).

YORKSHIRE AEROPLANE CLUB

REPORT for week ending March 11.—Flying time, 17 hrs. 55 mins. Instruction, 9 hrs. 50 mins.; soloists, 7 hrs. 5 mins.; passengers, 1 hr.

Instruction (with Capt. Beck): Messrs. Ambler, Brown, Clayton, Cooke, Jackson, R. K. Lax, T. Miller, Norway, Ostler, Senior, Shires, Ward, Watson, Yeomans.

Soloists: Messrs. D. Etcherley, Clapham, Lister.

"A" Pilots: Messrs. Dawson, Ellison, Norway, I. Thomson.

Passengers—With Mr. Lister, Mr. Shires; with Mr. Thomson, Messrs. Ellison and Ostler.

An uneventful week, with the exception of a slight improvement in hours. Dick Atcherley paid his usual week-end visit by air, and the club-house committee have been delving into the affairs of that much-promised, much-needed, and much-looked-forward-to club house, and rumour has it that by Whitsuntide this will be in full swing. One hopes that it will make a considerable difference to the Yorkshire flying hours.

THE GUGGENHEIM SAFE

IN view of certain questions that have been raised in regard to the Guggenheim Safety Aircraft Competition (see the AIRCRAFT ENGINEER for June 23 and July 28, 1927), the following rulings have been made by the trustees of the fund:—

1. *Question*.—Supposing a machine were entered on September 1, 1927, and were delivered in New York in March, 1928, would that machine with its pilots and mechanics be expected to remain on the "designated field" until the closing of the competition some time after October 31, 1929?

Ruling.—After the completion of the tests and the awarding of the points, there would be no necessity for the aircraft to remain at the field. The number of points awarded is a sufficient record.

2. *Question*.—What of the extreme difficulty of obtaining

Norwich Aero Club Social

ON March 9, the Norfolk and Norwich Aero Club held another social, at which the Chairman, Mr. A. A. Rice, welcomed the visitors. This was one of a series it was hoped to hold during the next few months. Disappointment was felt at the unavoidable absence of Flt.-Lt. Webster, the winner of last year's Schneider Trophy Race. Squadron Leader Rae, the test pilot of Boulton and Paul, Ltd., Norwich, said that he had received a message from Flt.-Lt. Webster, explaining that he had been summoned before the Secretary of State for Air, making it impossible for him to attend the social. But he hoped to visit Norwich later. The band from Felixstowe Air Station attended gratuitously, and played attractively. Flt.-Lt. Comper, of Felixstowe, delivered a lecture on light aeroplanes, illustrated with lantern slides. What was wanted, he said, was a cheap aeroplane. A really light aeroplane was small and cost very little. It was possible now to produce an engine weighing only 100 lbs. which would give 50 h.p. With such an engine a machine could be half the weight of the present light aeroplane, and the cost of flying comparable with that of a two-seater car.

Capt. H. Cator appealed for increased membership of the Club. He said that this summer a miniature golf course, Badminton and other amenities would be arranged at the aerodrome.

Avro Club

To provide social intercourse between employees of A. V. Roe and Co., an Avro Club has been formed with a membership already amounting to 184. The Club is fully licensed and open every week-day at the canteen.

Private Owner Killed

LADY CARBERY, the wife of Lord Carbery, was killed whilst flying her D.H. "Moth" at Nairobi, Kenya Colony, on March 12. During the afternoon she had taken friends for flights, and in the evening Mr. Cowie accompanied her to take instruction. The machine was seen to lose flying speed,

FROM THE FLYING SCHOOLS

De Havilland Flying School, Stag Lane Aerodrome

REPORT for the week ending March 11.—Total flying hours, 66 hrs. 50 mins. Instruction: dual, 15 hrs. 15 mins.; solo, 34 hrs. 45 mins. Other flying, 16 hrs. 50 mins.

Six new "Moths" were tested prior to delivery, and representatives of various foreign governments were given demonstration flights during the week.

On Friday, although the weather conditions were far from ideal, the Hon. Lady Mary Bailey set out on her lone flight to the Cape, accompanied, however, by the heartiest wishes of everyone for the successful conclusion of a most sporting undertaking.

One Royal Air Force Reserve "ab initio" pupil did a first solo, and two other pupils are now ready for "A" licence tests as soon as weather conditions are favourable.

Henderson Flying School, Brooklands Aerodrome

REPORT, week ending March 8.—Total, 25 hrs. 5 mins. Dual, 14 hrs. 40 mins.; solo, 10 hrs. 25 mins.

Dual (with Mr. H. D. Davis): Messrs. Glenny, Liniker, Crabtree, Anderson, Hamilton, Jonassen, McCabe, Whittard, Dr. Wall, and Dr. Foreythe.

Solo: Messrs. Crabtree, Anderson, McCabe, Lattey, Liniker, Patton Bethune, Glenny and Dr. Wall.

Despite the fact that it was impossible to fly for two days owing to heavy rain storms, this has been the best week since the New Year.

Mr. Lattey took off with the idea of completing his height test. He ran into heavy snow storms and thick clouds, and was only able to push the machine up to 5,000 feet owing to the blinding snow. During the flight, the wind increased and Mr. Lattey put up a fine display of piloting.

Mr. Anderson has now completed all his tests for his R.A.C. licence, and finished off by spinning A. J. Mr. Anderson has made remarkable strides, and to watch him fly one would think an old experienced pilot was in the cockpit. In a competition held among the pupils on the school "bus," the height record is at present held by Mr. Anderson at 9,500 ft.

Capt. A. E. Golds is now helping out instruction during the week-end rush. Mr. Lattey has now qualified for his "A" licence.

AIRCRAFT COMPETITION

a really fair comparison of merit as regards stick and unstick due to inevitable variation of wind?

Ruling.—If "calm" air is not obtainable tests of this character will be repeated under different wind conditions and curves of distances plotted against wind speed.

3. *Question*.—In calculating cargo space, what weights shall be specified for pilot, observer and instruments fitted by the Fund?

Ruling.—For the purpose of calculating the cargo space for which provision must be made, the combined weights of the pilot, observer, and any special instruments or equipment fitted by the Fund for the purpose of the competition is to be taken as 400 lbs.

4. *Question*.—To obviate ground effect, at what altitude will speed tests be run?

Ruling.—The test for speeds will be at such an altitude as to preclude the possibility of ground interference.

and before it crashed Lady Carbery jumped out, but was instantly killed. Mr. Cowie was also killed. Lord Carbery was a witness of the disaster. It was only a month or two since his wife had returned to Kenya with her machine after spending many months in this country last year, learning to fly at Stag Lane. Her husband, a pioneer, who preferred to be known as Mr. Carberry, flew out from Croydon before her in his new Fokker "Universal." Lady Carbery was his second wife.

Red Rose Re-starts

CAPT. LANCASTER and Mrs. Keith Miller left Singapore on March 13 in their Avro "Avian" to resume their flight to Australia from England. It will be recalled that they crashed at Muntok in January, and the machine was taken back to Singapore for repairs.

Another Cape Flight

LADY BAILEY left Croydon on March 9 in her D.H. "Moth" with the intention of making an unaccompanied flight to the Cape. An extra petrol tank had been fitted in the front cockpit which allows for non-stop flights of 10 hours, if necessary. Only two small suit-cases comprised her personal luggage. The first landing after leaving Croydon was at Sacy le Petit (Oise), owing to fog. On the following day Paris was reached. Immediate progress was then checked by snowfalls, but when a start was made Lady Bailey got to Lyons, encountering a little difficulty through a faulty compass. Despite a strong mistral that was raging, the next stage to Marseilles was made on March 11. On March 12 Lady Bailey left Marseilles for Pisa at noon. A number of pilots went up to bid her farewell.

Capetown-England Honeymoon Flight

It was reported, on March 3, that Lieut. R. R. Bentley and his bride had left Cape Town in his D.H. "Moth" with the object of spending the honeymoon on a flight to England. This South African pilot received the A.F.C. for flying from London to Cape Town in the same machine, last September.

GIRLS FROM THE FOUR WINDS

African Survey Flight

SIR ALAN COBHAM reached Durban in the Short "Singapore" flying-boat from Lourenco Marques, Portuguese E. Africa, on March 8, after 4½ hrs. flying. Durban will be his temporary headquarters, and the machine will be overhauled, purely as a matter of precaution.

R.A.F. African Flight

THE four R.A.F. Fairey III F machines which are carrying out the annual service flight from Cairo to the Cape and back, reached Nairobi on March 7.

Long-Distance Record Attempt

CAPT. HINCHLIFFE left Cranwell aerodrome, Lincolnshire, on March 13 in his Stinson monoplane (Wright "Whirlwind") for an unknown destination. His companion was first reported to be Mr. Gordon Sinclair. Whilst testing his machine during last week the pilot was accompanied by the Hon. Elsie Mackay, who has a slight financial interest in the venture, which is an effort to set up a new long-distance record. Miss Mackay said she had no intention of actively participating in it but, it was reported later, that Capt. Hinchcliffe had actually set out to cross the Atlantic, and that "Mr. Sinclair" was really Miss Mackay. It was understood that Philadelphia would be Capt. Hinchcliffe's goal. Up to the time of going to press no news has been received of their progress, other than the machine was sighted over Ireland.

Aviation Loses a Friend

By the death of Mr. Rodman Wanamaker, head of the great American stores named after him, aviation has lost a patron. One of his particular acts of generosity was the financing of Commander Byrd's flight across the Atlantic last year.

Glosters for Japan

THE Gloster "Gambit" has won a competition for deck-landing scouts held by the Japanese Navy.

Mr. Levine's Latest!

MR. CHARLES LEVINE, the wealthy American business man and a spectacular follower of aviation, announced that he is already constructing an aeroplane to carry fifty passengers, with which he hopes to start an air service between New York and London. He said it would be equipped with seven engines developing 6,000 h.p., and the wing span would be 180 ft. Mr. Levine also declared that his recent non-stop flight to Cuba demonstrated the possibility of a service between New York and Cuba.

North Pole Airship Ready

GENERAL NOBILE's airship, the "Italia," which has been constructed for a North Pole Expedition, made a successful test flight along the Italian coast on March 9. General Nobile stated that he was satisfied with it.

French Air Liner Crash

A FARMAN "Goliath" operating on the French Air Union's service between Paris and London crashed in the Channel about nine miles from Folkestone on March 11. The pilot, Andre Schmutz, and his mechanic, Raymond Terade, were picked up dead by the Channel steamer, *Maid of Orleans*. A wireless message from the machine was received by Croydon at 11.37 a.m., which stated that the machine was descending in the Channel, and messages were immediately sent to all ships in the area giving the approximate position of the descent. The machine had left Paris the day before, and made a landing at St. Inglevert owing to stormy weather. Three passengers were on board, and when the flight was resumed the following morning, they decided not to continue with the machine owing to the bad weather. They thus narrowly escaped the disaster. The pilot was well known and very experienced, having seen extensive service during the War. He had been flying on the London-Paris route for six months.

New German Flying-Boat

A LARGE Dornier-Napier flying-boat has just been tested satisfactorily over Lake Constance. It is constructed of metal and fitted with four British-made Napier engines developing 2,000 h.p. Twenty passengers and a crew of three

are accommodated. The cruising speed is 105 m.p.h., and loading capacity 12 tons.

Orders for England

IT has been decided to use British aircraft for the new air service from the Rand to Durban. The Junkers Company of Germany made a tempting offer to the organisers, but acceptance would have meant erecting special repair works in South Africa. The Government has offered facilities for repairs at Pretoria, the military headquarters.

New Air Survey Machine

A SPECIAL machine is being constructed to the order of the Aircraft Operating Co. for air survey work. Two air-cooled engines will be fitted with geared propellers, and the ceiling, with both engines, will be, it is expected, about 23,000 ft. The machine will probably be in use before next winter.

The Avia Aeronautical Engineering Co., Ltd.

THE well-known Czech aircraft firm of Milos Bondy a Spol., of Prague, which produced the "Avia" machines, will in future be known as the Avia Aeronautical Engineering Co., Ltd. The address, however, remains as before—Prague VII—Osadni 799, Czechoslovakia.

Speed Record Competition

MAJOR DE BERNARDI, the Italian pilot, proposes to attempt another seaplane speed record with the machine in which he created the existing record.

Vulture Causes Crash

WHEN flying in Nicaragua at the Marine flying field at Esteli, on March 8, Capt. W. C. Byrd and Sergeant R. Frankforter, of the United States Marines, were killed owing to the collapse of a wing strut after a vulture had blundered into it. As the wing structure gave way and the machine fell both men jumped with their parachutes, but at their low altitudes the parachutes failed to save them. Collisions between birds and aircraft have often occurred, but not with fatal consequences before, except, possibly, to the birds.

South American Air Mail

THE first air mail to be conveyed between Paris and South America reached Porto-Praia (Cape Verde Islands) by seaplane on March 7 from St. Louis, Senegal, and was transferred to a steamer which then proceeded towards Pernambuco, Brazil. The mail left Paris by air on March 2.

Australian Fatality

THE well-known Australian pilot, Flight-Lieut. Ivor McIntyre, was killed on March 13 when his machine crashed during a "stunt" flight. He was a fellow-pilot of Wing-Comdr. Goble's on the flight round Australia some time ago, and he also accompanied Group-Capt. Williams on the tour of the Pacific Islands. Last year he resigned from the Air Force to take up the appointment as instructor to the South Australian Aero Club at Melbourne. He was 28 years of age.

Irish Free State Flight

COMMANDANT J. FITZMAURICE, commanding the Irish Free State Air Force, flew from London to Dublin recently in a new Fairey III.F.

Lindbergh's Latest Medal

THE Woodrow-Wilson Foundation has conferred upon Col. C. Lindbergh the Peace Award, which consists of a medal and £5,000, for his Atlantic flight and subsequent flights in the cause of aviation.

Belgian Flight to Congo

ON March 9 the Belgian airmen, Thieffry, Quersin and Lang, left the Evere aerodrome, Brussels, for a flight to the Congo in four stages. Their machine is of Belgian construction and fitted with an Hispano-Suiza engine of 600 h.p. An hour after leaving Brussels it was forced to land at Heer Agimont, in the Ardennes, slight damage being done to the undercarriage.

Canadian Item

A NEW exploration company has been formed in Canada styled the Northern Aerial Minerals Exploration, which will keep in touch with prospectors by means of an air fleet. The organisers are Mr. J. Hammell, a pioneer, and Doctor Oakes a pioneer mining air pilot.

THE ROYAL AIR FORCE

London Gazette, March 6, 1928

General Duties Branch

Pilot Officer on probation R. J. Stone is confirmed in rank and promoted to rank of Flying Officer (Feb. 11); Flight Lieut. J. E. MacLennan is placed on retired list at his own request (March 7); Flight Lieut. J. R. F. Randell, D.F.C., is placed on retired list at his own request (March 3) (substituted for Gazette Feb. 28); Flying Officer S. J. Gilbert relinquishes his short service commn. on account of ill-health (March 7).

Medical Branch

The following are granted permanent commns. in ranks stated (March 7):
Flight Lieutenants.—A. F. Cook, E. J. Jenkins, J. Magner, M.B.
Flying Officers.—L. Freeman, G. S. Strachan, M.B.
The following Flying Officers are promoted to rank of Flight Lieutenant (Feb. 23):—J. P. Hederman, E. J. Mockler, M.B. Flight Lieut. C. V. D. Rose resigns his permanent commn. on appointment to a commission in R.A.M.C. (Feb. 16).

ROYAL AIR FORCE INTELLIGENCE

Appointments.—The following appointments in the Royal Air Force are notified:—

General Duties Branch

Group Captain A. V. Bettington, C.M.G., to Home Aircraft Depot, Henlow, to command, 22.2.28.

Squadron-Leaders: W. R. D. Acland, D.F.C., A.F.C., to R.A.F. Base, Calshot, 5.3.28. A. Lees, to No. 56 Sqdn., North Weald, 7.2.28. W. H. Dolphin, to Aircraft Depot, India, 28.1.28. A. F. Brooke, to No. 28 Sqdn. India, 23.2.28.

Flight-Lieutenants: F. H. Laurence, M.C., to R.A.F. Base, Calshot, 5.3.28. H. Hackney, to R.A.F. Base, Calshot, 6.3.28. J. D. I. Hardman, D.F.C., to Armament and Gunnery Sch., Fastchurch, 29.2.28. E. F. Haylock, to R.A.F. Training Base, Leuchars, 1.3.28. H. C. Irwin, A.F.C., to R.A.F. Depot, Uxbridge, 1.3.28. C. E. V. Porter, to R.A.F. Training Base, Leuchars, 1.3.28. H. E. Forrow, to Wessex Bombing Area H.Q., Andover, 1.3.28. R. Jones, to Sch. of Army Co-operation, Old Sarum, 3.3.28.

IN PARLIAMENT

Airship Masts

SIR SAMUEL HOARE, on February 29, in reply to Mr. Day, said, two mooring masts, one at Cardington and one at Ismailia, have been erected, and another mast is projected at Karachi. The combined cost of the two first-named masts is approximately £100,000, and falls on the Imperial Exchequer. It is proposed that the cost of the mast at Karachi, which will be in the neighbourhood of £50,000, should be borne by India, and the Legislative Assembly has the matter under consideration at the present time.

Royal Air Force Flight to Australia

SIR PHILIP SASSOON, on March 1, in answer to Sir H. Brittain, said the R.A.F. Flight reached Singapore on February 28, thus completing over 11,000 miles of its total cruise of 28,000 miles, schedule time is being kept, subject only to the voluntary modification that the flight waited for a day at Port Swettenham, at the request of the Governor of the Straits Settlements, in order to take the Governor and his staff to Singapore. It is expected that the flight will have completed the circuit of Australia and have returned to Singapore by the middle of next September, after which it will proceed to Hong-Kong, and return to Singapore in January.

Iraq (Akhwan Raids)

Mr. DAY, on March 6, asked the Secretary of State for the Colonies whether any communications have taken place between the British Government and Ibn Saud as to the present British policy of repelling raiders in Iraq; and, if so, can he give the House particulars?

Mr. Amery: His Majesty's Government have been most careful to furnish King Ibn Saud with prior information as to the action to be taken to repel the raiders. I do not think it desirable to give particulars at this stage.

Colonel Wedgwood asked the Secretary of State for the Colonies whether he is making any inquiry as to the failure of the British Air Force to prevent raids on the southern frontier of Iraq?

Mr. Amery: No. I see no reason for making an inquiry. I am quite

RESERVE OF AIR FORCE OFFICERS

General Duties Branch

The following are granted commissions in Class A as Flying Officers on probation:—R. P. D. Brailly, G. M. Cox, M.C., C. T. E. Smith (March 6). E. J. Brighton is granted a commn. in Class AA as Pilot Officer on probation (March 6).

The following Pilot Officers are promoted to rank of Flying Officer:—D. H. B. Clark (March 1); L. J. C. Mitchell (March 6).

Flying Officer S. S. Kirsten is transfd. from Class C to Class A (Feb. 23). The following are transfd. from Class A to Class C:—Sqdn.-Leader J. R. Howett (March 4); Flying Officer W. J. McDonough (March 3); Flying Officer F. R. Offord (March 2).

Medical Branch

Flight Lieut. J. C. T. Fiddes relinquishes his commn. on completion of service (March 6).

AUXILIARY AIR FORCE

Accountant Branch

No. 602 City of Glasgow (Bombing) Squadron.—The following to be Pilot Officer: J. R. Stewart (Dec. 21, 1927).

Stores Branch

Squadron-Leader C. M. Bevan, to H.Q., Inland Area, Stanmore, 29.2.28. Flying Officers: A. G. Stratford-Tuke, to R.A.F. Base, Gosport, 9.1.28. A. E. Evans, D.F.C., to H.M.S. *Hermes*, 12.12.27. A. G. Stratford-Tuke, to No. 3 Stores Depot, Milton, 28.2.28. C. Hanson-Abbott, to Air Ministry (Directorate of Equipment), 23.2.28. E. G. M. Charleson, to No. 208 Sqdn., Middle East, 14.2.28. E. A. Slater, to No. 5 Sqdn., India, instead of to No. 2 Wing H.Q., as previously notified, 7.1.28.

Accountant Branch

Flying Officer F. M. Hall, to No. 23 Group H.Q., Grantham, 8.3.28.

Medical Branch

Flying Officer J. E. Foran, M.B., to Palestine General Hospital, 4.2.28.

NAVAL APPOINTMENT

The following appointment was made by the Admiralty on February 29:—Lieut. (Flying Officer, R.A.F.) M. Cursham, to *Courageous* (Feb. 16).

satisfied that the Air Force has done, and is doing, all that is possible to deal with these raids, and that the marauders will ultimately learn that they cannot penetrate peaceful neighbouring territory and indulge with impunity in wanton pillage and the massacre of men, women and children.

Shipwright Ratings and Aircraft Instruction.

MR. BRIDGEMAN, on March 7, in reply to Mr. Hore-Belisha, said it is not practicable at present to arrange for shipwright ratings to undergo a course of aircraft instruction ashore, as is done for certain shipwright officers. Arrangements are, however, in force for some of these ratings to undergo a somewhat similar course of instruction on board aircraft carriers as opportunity offers.

R.N. Aircraft

LIEUT.-COLONEL HEADLAM, on March 9, in answer to Commander Bellairs, said the number of first-line aircraft in the Fleet Air Arm is now 195, not including reserves; the number available on July 1, 1928 will be the same, as wastage is made good as it occurs.

PERSONALS

To be Married

The marriage arranged between Sqdr.-Ldr. J. B. COLE-HAMILTON and Miss H. V. LESLIE FOX, will take place at 2 o'clock on Tuesday, June 12, at St. Giles' Church, Bradford-on-Tone, Taunton.

The engagement is announced of the VISCOUNT KNOLLYS, D.F.C., and Miss MARGARET COATS, daughter of Sir Stuart and Lady Coats, of Ballathie, Perthshire.

A marriage has been arranged, and will take place very quietly, between Wing-Commander B. E. SUTTON, D.S.O., O.B.E., M.C., only son of the Rev. Canon Sutton, C.B.E., Bridekirk Vicarage, Cumberland, and MARGARET GRISELDA, only daughter of ALEXANDER WEDDERBURN, K.C., C.B.E., The Hoo, Willington, Sussex.



New Home for Bristol Engines: The ever-increasing demand for Bristol air-cooled engines has necessitated the construction of new offices at Filton, a front view of which we show here. The lower floor mainly affords accommodation for administrative offices, whilst the upper floor has been specially designed for use as a drawing office, with excellent lighting arrangements, which is now well clear of the noise from the main works.

R.A.F. BOXING

THE Royal Air Force Boxing Championships were concluded at Halton on March 1. At the end of the meeting Air Vice-Marshal Scarlett introduced Sir Philip Sassoon, who thereupon presented the prizes. The results were:—

Airmen

Fly-Weights.—Semi-final.—Aircraftman Palmer (Halton) beat Aircraftman Mudd on points.
Final.—Cooper beat Palmer on points.
Bantam-Weights.—Semi-final.—Leading Aircraftman Williamson (Henlow) beat Aircraftman Black (Sealand) on points.
Final.—Williamson beat Johnson on points.
Feather-Weights.—Semi-final Round.—Aircraftman Fairclough (Halton) beat Aircraftman Powell (Calshot) on points; Corporal Blaze (Halton) beat Aircraftman Borland (Digby) on points.
Final Round.—Blaze beat Fairclough on points.
Light-Weights.—Semi-final Round.—Leading Aircraftman Clarke (Digby) beat Aircraftman Scoggins (Manston) in the second round; Aircraftman Garrett (Henlow) beat Aircraftman Wilson (Worthydown) on points.
Final Round.—Garrett beat Clarke on points.
Welter-Weights.—Semi-final Round.—Aircraftman Buchanan (Manston) beat Aircraftman Ballantyne (Flowerdown) on points; Corporal Brady (Worthydown) beat Corporal Cockburn (Leuchars) on points.
Final Round.—Brady beat Buchanan on points.
Middle-Weights.—Semi-final Round.—Sergeant Higgins (Netheravon) beat Aircraftman Scully (Gosport) on points; Aircraftman Rollason (Leuchars) beat Aircraftman Clapp (Halton) on points.
Final Round.—Higgins beat Rollason (holder) on points.
Light Heavy-Weights.—Semi-final Round.—Aircraftman Mather (Lee-on-Solent) beat Aircraftman Thomas (Upavon) in the first round; Aircraftman Mockley (Henlow) beat Aircraftman Christian (Manston) on points.
Final Round.—Mather, w.o.; Mockley, scratched.
Heavy-Weights.—Semi-final Round.—Aircraftman Forrester (Cranwell) beat Aircraftman Higgins (Calshot) on points; Aircraftman Jones (Aldergrove) beat Aircraftman Robinson (North Weald) in the third round.
Final Round.—Forrester beat Jones in the second round.

Officers

Feather-Weights.—Final.—Flying Officer Watkins (Old Sarum) beat Pilot-Officer Hazeldine (Digby) on points.
Welter-Weights.—Final.—Flying Officer Loughman (Catterick) beat Pilot-Officer de Courcy Wheeler (Digby) on points.
Middle-Weights.—Semi-final.—Flying Officer Baxter (Shrewsbury) beat Pilot-Officer Warner (Digby), who retired in the second round; Pilot-Officer McLean (Worthydown) beat Flying Officer Underdown (Old Sarum) on points.
Final.—McLean beat Baxter on points.
Light Heavy-Weights.—Final.—Flying Officer Thorn (Farnborough) beat Flying Officer Bell (Old Sarum), who was disqualified for hitting low, after Thorn had slipped, in the first round.
Heavy-Weights.—Semi-final.—Flying Officer Chichester (Manston) (holder) beat Flying Officer Dillon-Trenchard (North Weald) on points; Flying Officer Beamish (Bicester), w.o.; Flying Officer O'Callaghan (Worthydown) who scratched, owing to sickness.
Final.—Chichester beat Beamish in the third round.
The Royal Air Force beat London University in a boxing match at the Stadium Club on March 9, when the results were:—
Bantam-Weights.—Aircraftman Johnson (R.A.F.) beat G. Thomas (Goldsmiths' College) in the second round.
Feather-Weights.—Pilot-Officer Hazeldine (R.A.F.) beat M. Blaker (King's College), the latter retiring with a damaged thumb in the first round; J. Cullinan (University College) beat Flying Officer Watkins (R.A.F.) on points; R. Nobleston (University College) beat Aircraftman Fairclough (R.A.F.) on points.
Light-Weight.—Aircraftman Scroggins (R.A.F.) beat A. Toettcher (Goldsmiths' College), the referee stopping the fight in the second round; Aircraftman A. A. Garrett (R.A.F.) beat J. Nicholson (Goldsmiths' College) on points; Aircraftman Wilson (R.A.F.) beat W. Russell (King's College), the referee stopping the bout in the first round.
Welter-Weights.—Flying Officer Loughman (R.A.F.) beat Leslie Yendoll (Guy's Hospital) on points; Aircraftman Garrett (R.A.F.) beat T. Forse (University College), the referee stopping the bout in the first round; A. Ivanoff (King's College) beat Aircraftman Buchanan (R.A.F.), the referee stopping the bout in the first round.
Middle-Weights.—Aircraftman West (R.A.F.) beat G. Stuyck (King's College Hospital) on points; Aircraftman Woods (R.A.F.) beat C. A. Hodges (St. Thomas's Hospital) on points; Aircraftman Clapp (R.A.F.) beat P. Bowers (University College), the referee stopping the bout in the third round.
Light Heavy-Weights.—Flying Officer Bell (R.A.F.) beat T. Cook (East London College) in the third round; Aircraftman Christian (R.A.F.) beat E. Peters (King's College), the referee stopping the bout in the third round.
Heavy-Weight.—Flying Officer Dillon-Trenchard (R.A.F.) beat B. Beal (Wye College), the referee stopping the bout early in the first round; W. Treisman (East London) beat Flying Officer Chichester (R.A.F.) on points.
Special Six-Rounds Contest (Fly-Weight).—G. Johnson (Fitzroy Lodge B.C.) beat A. Friend (Harroldian B.C.) on points.



ROYAL AIR FORCE MEMORIAL FUND

A MEETING of the Executive Committee was held at Iddesleigh House, on February 29.

Lord Hugh Cecil was in the chair, and was supported by a large number of Members of the Committee. The Report and Accounts were both adopted.

The Committee were very pleased at receiving what is likely to be a considerable sum of money from an anonymous donor, who has approved of a scheme put forward by the Committee that the sum in question should be put into a trust, the income to be devoted towards educational purposes, and the scheme will be put into being within the course of the next few months.

The Vanbrugh Castle School opened for the spring term on January 10, with thirty-eight boys.

Next meeting April 25, at 3 o'clock.

The usual meeting of the Grants Sub-committee of the fund was held on March 8. Mr. Walter S. Field was in the

chair, and the other members of the committee present were Mrs. L. M. K. Pratt-Barlow, O.B.E., Sqdn.-Ldr. Douglas Iron, O.B.E. The committee considered in all 12 cases, and made grants to the amount of £307 5s. The next meeting was fixed for March 22, at 2.30 p.m.



British Airships, Ltd.

LIEUT.COM. SIR SAMPSON SLADEN, K.B.E., R.N., has joined the Board of British Airships, Ltd., as a director and is going to take an interest in the heavier-than-air section in Blackpool and possibly in the Isle of Man. Capt. Lines, M.C., late pilot instructor of the Norfolk and Norwich Aero Club has joined this company as chief pilot of this section, and in co-operation with Mr. Lincoln Sutton, managing director, the company has opened the programme with the purchase of an Avro "Avian" which will be put on service in London.

Handley Page, Ltd. Annual Report

HANDLEY PAGE, LTD., report a profit of £31,638 for 1927, after allocating £15,000 to the reserve. The directors thought it was prudent to set aside the latter sum in view of the change in design and manufacturing methods consequent upon the adoption of all-metal construction. The year's profit compares with approximately £27,000 for each of the two preceding periods. A final dividend on the year of 5 per cent. on the preference shares is proposed, making the full 10 per cent. for the year, leaving £11,723 to carry forward. The capital was reduced in March, 1927.



PUBLICATIONS RECEIVED

Pilot's "A" Licence. Compiled by John F. Leeming. Sir Isaac Pitman and Sons, Ltd., 39-41, Parker Street, Kingsway, W.C.2. Price 3s. 6d.

Timken Magazine. December, 1927. Automotive Products Co., 3, Berners Street, London, W.1.

Catalogue

Bearing Metals and Finished Bearings. The Glacier Metal Co., Ltd., Ealing Road, Alperton, Middlesex.



NEW COMPANIES REGISTERED

JAMES BUNNING, LTD.—Capital £100, in 5s. shares. Objects to acquire aircraft of all kinds and particularly aeroplanes; aircraft proprietors, public air services, carriers by air of passengers and goods, etc. Permanent directors: R. J. Bunning and Mrs. Hilda F. Bunning, St. Brannocks, Glaslwich, Newport, Mon.

AEROMARINE, LTD., Wivenhoe, Essex.—Capital £2,000, in £1 shares. Boat and yacht builders, marine motor and engine manufacturers, makers of and dealers in aeroplanes and all kinds of aircraft, etc. First directors: Capt. J. S. Coats, M.C., and P. R. Bordewich, Jur. Solicitors: Vivash Robinson and Co., 34, Clements' Inn, W.C.2.



AERONAUTICAL PATENT SPECIFICATIONS

(Abbreviations: Cyl. = cylinder; i.c. = internal combustion; m. = motor. The numbers in brackets are those under which the Specifications will be printed and abridged, etc.)

APPLIED FOR IN 1926

Published March 15, 1928

29,290. GLOSTER AIRCRAFT CO., LTD., and F. DUNCANSON. Variable-camber wings. (285,577.)

APPLIED FOR IN 1927

Published March 15, 1928

2,854. F. A. SIDWELL. Drive transmission of i.c. engines for aircraft. (285,636.)

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